The Executive's Guide to Mastering the Web in Business

WEBMASTER

July 1997

THE HUMAN CONDITION

How Owens Corning INSULATED Its Web Effort From The Human Elements

OC's Technology Application Leader Craig Landwehr

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Planning The Push Infrastructure
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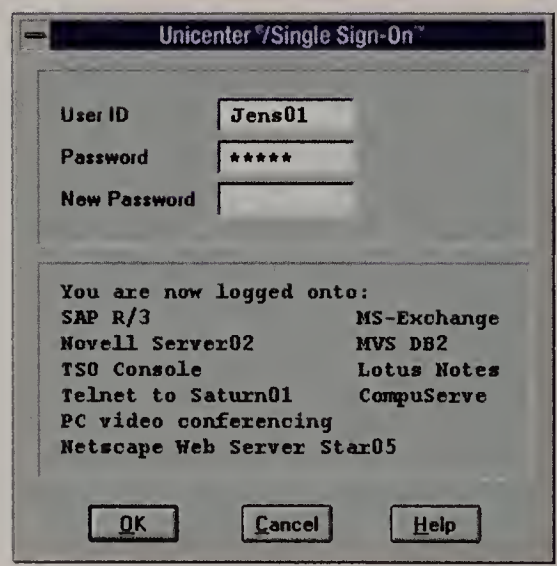

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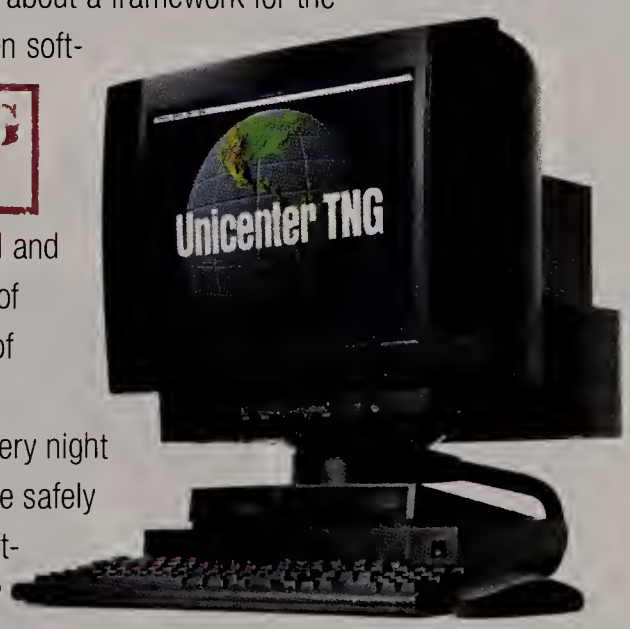

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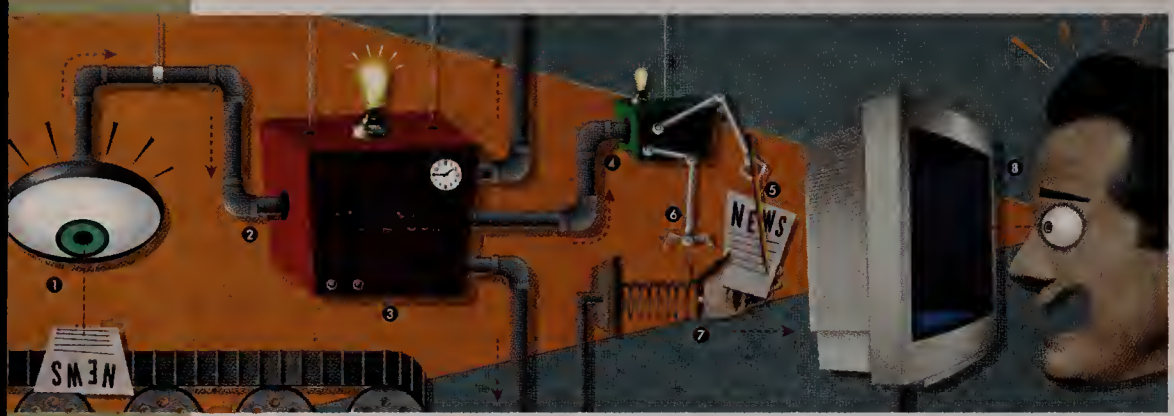

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By Mike Carifio

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Infrastructural Engineering

INFRASTRUCTURE is one of those fat, happy words that can serve a multitude of purposes. These days it's used so often, in fact, that its very familiarity creates a four-syllable blur that you hardly hear at all. Still, it's a pretty good word, standing for the various hard- and soft-tissue resources necessary to support a self-contained and sometimes quite extensive architecture of shared objectives. A city government commands an infrastructure; a dwelling, once occupied and provisioned, consists of an infrastructure; an ISP requires an infrastructure; an ecosystem *is* an infrastructure; a religion asserts an infrastructure of belief and sustains it with an infrastructure of devotional focus and practical administration.

You could argue that there's no such thing as an accidental infrastructure, that all derive from a carefully conceived, carefully executed plan. And you could argue just as passionately that the best, most creative infrastructures are born out of collision and apparent randomness.

Despite the chaotic example of the Big Bang, most of us hold the former view: Nothing that we expect to work properly can be trusted to build itself out of unclear intentions. And yet that is precisely how some Web infrastructures are evolving.

This is not unprecedented. The invasion into business organizations of other technologies—most notably PCs—has occurred in an unplanned, unbidden way. (CIOs and others are still suffering the fallout from a decade of malign neglect roughly spanning the years from 1983 to 1993.) And the monstrous Internet itself grew not by orderly cell division but by disparate amalgamations as segments of TCP/IP DNA were zippered together over the decades into a network whose piecemeal legacy scares the pants off business executives making mission-critical bets on the Mother of all Pipes.

This edition of *WebMaster* zeros in on some of the infrastructural challenges that organizations must wrestle with successfully if they hope to achieve positive Web-enabled business transformation. Our lineup of features encompasses a quartet of pressing issues: linking the Web to legacy systems ("Old Data, New Tricks," Page 52); developing useful approaches to implementing push solutions ("The Pull of Push," Page 34); predicting (with the help of seven notable futurists) the coming business infrastructure ("7 Seers," Page 44); and, finally, maneuvering adroitly amidst that most turbulent of all infrastructural elements—human nature ("So Many Ideas, So Little Site," Page 26).

Of particular importance is that last feature—Senior Writer Jennifer Bresnahan's profile of Owens Corning's adventures in Web governance. As with most technology initiatives, human factors turn out to be deciding factors.

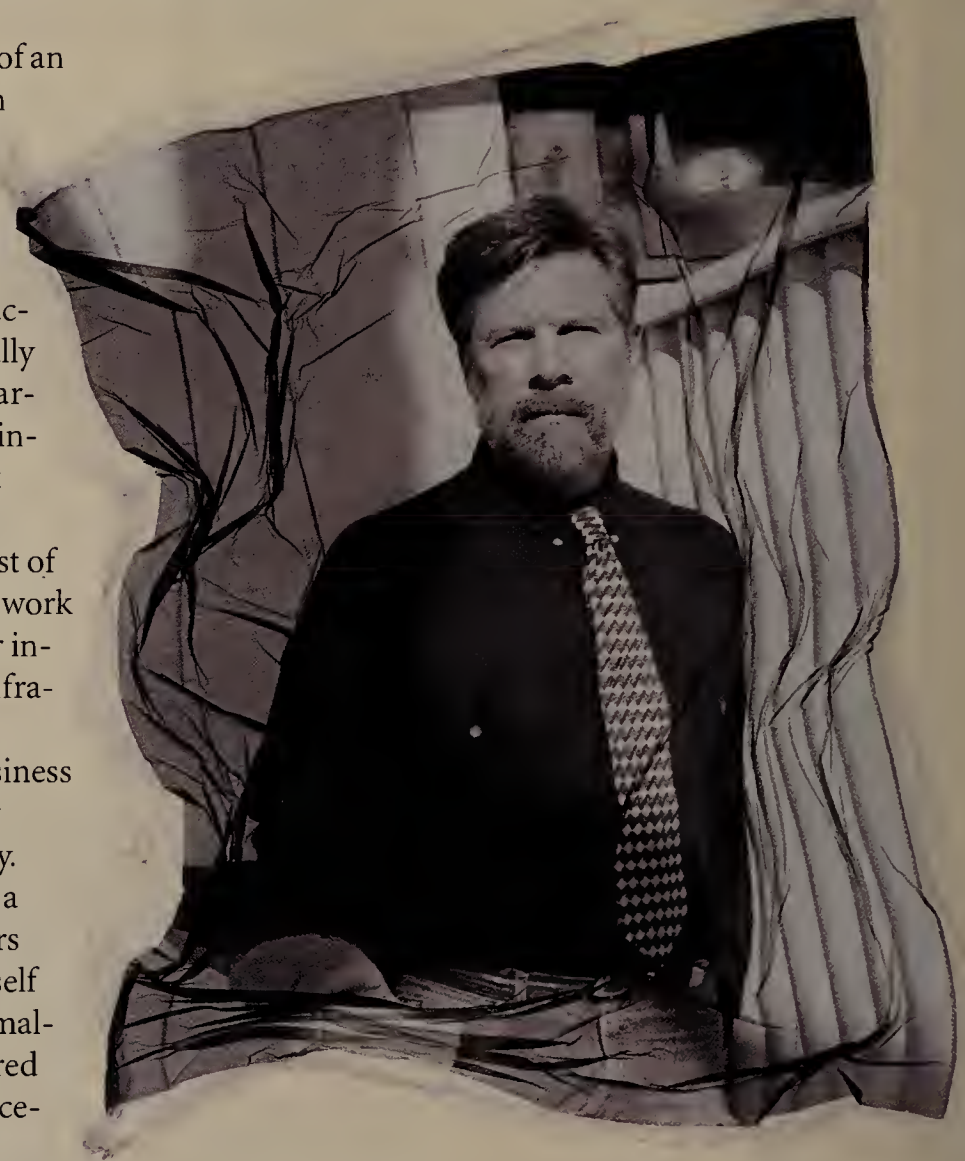


PHOTO BY JERRY MARGOLYCZ

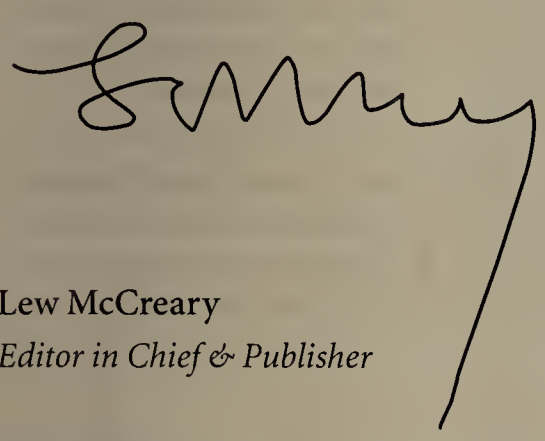
The Owens Corning experience shows how—even in an enterprise where the need for effective planning is understood and zealously pursued (and, best of all, enjoys active, visible CEO commitment)—achieving the desired results is a process of exhausting negotiation, compromise and a clearly defined place where the buck finally stops. What saved the bacon of all concerned, writes Bresnahan, is that project leader Craig Landwehr forced

stakeholders to hash out the purpose, scope and time frame of the project at the very beginning of the process. Without that (and perhaps without Landwehr's strangely relevant earlier career experience overseeing the design of industrial heating and ventilation systems), the initiative would have lacked an organizing principle—the soul of infrastructure.

Which brings me around to the consensus lessons of *WebMaster*'s recently concluded online forum on Web ROI (*www.cio.com/forums/roi/*). According to panelist Harry Max (one of the founders of the groundbreaking Virtual Vineyards Web site), among the key reasons Web sites fail is because they do not clearly enough connect their owners' business objectives with the needs of their intended customers. Nothing new or surprising in that. Deriving impressive benefits from technology investment has always depended on a superlative fit between the chosen technology and the business goals that it's meant to advance.

What the Web site initiators at Owens Corning have done well is to put the stress on the proper activities. As the article makes clear, there is nothing easy about managing people's expectations and desires. But without good governance, the venture flies off in too many directions. If the human infrastructure isn't nurtured along with the stuff that requires purchase orders, ROI will always remain elusive.

Are you infrastructurally challenged? Let us know: *mccreary@cio.com.*



Lew McCreary
Editor in Chief & Publisher

P.S.: With sadness, we note the departure of one of the indispensable architects of the *WebMaster* infrastructure. Executive Editor Leigh Buchanan has left us to become the editor of *Inc. Tech.* and a senior editor at *Inc.* magazine (direct your television trivia questions to her there). We wish her well and will miss her (along with her loopy creation, the infamous shaman/consultant Ezra Poundcake).

WEBMASTER

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Editorial Offices CIO Communications, Inc.
492 Old Connecticut Path, P.O. Box 9208, Framingham, Mass. 01701-9208
(508) 872-0080, FAX (508) 879-7784. Printed in the U.S.A.
Subscriber Services (800) 788-4605, FAX (508) 879-7899
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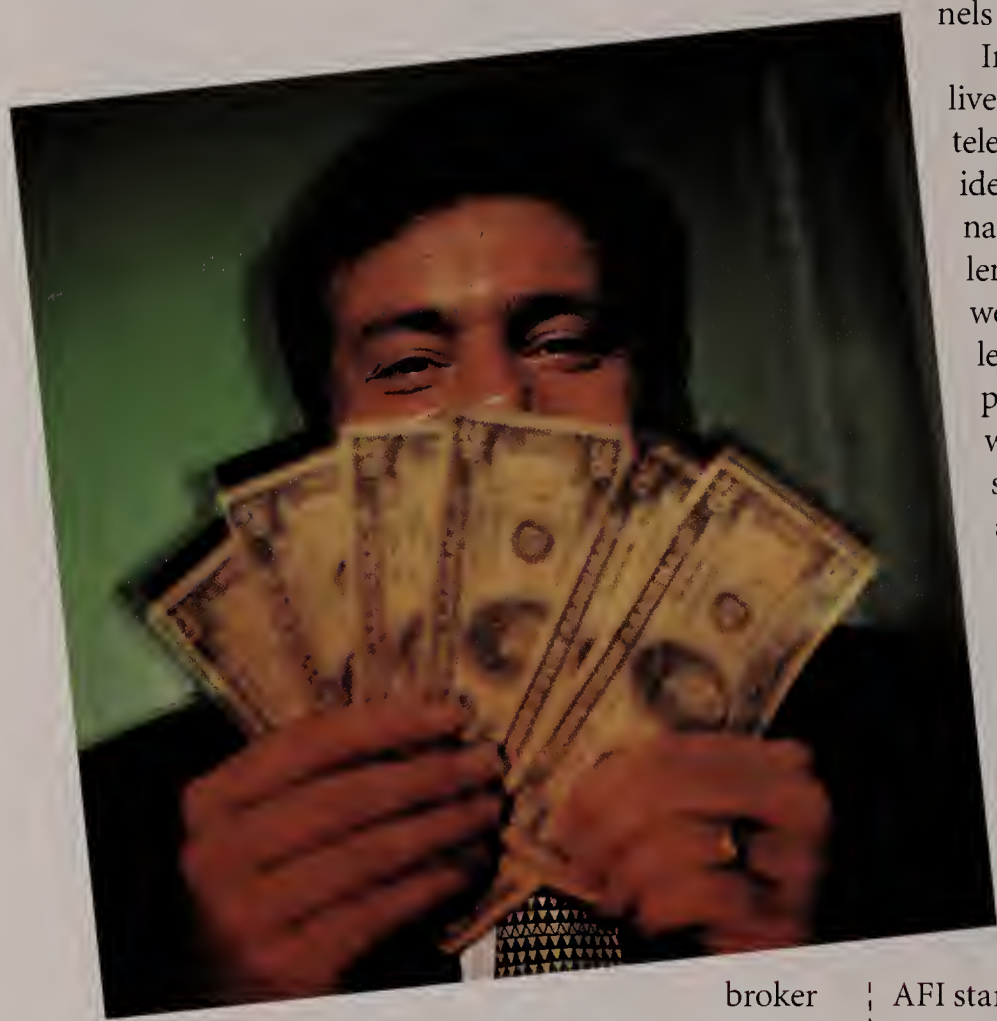
PROFILE

Beyond Dialing for Dollars

When Jack Rodgers, a former venture capitalist, met with Kyle Meyer early in 1994, Meyer's mortgage and loan company was in rough shape. Meyer, a former stock broker with Merrill Lynch, wanted to turn the two-year-old American Finance & Investment Inc. (AFI) around. The two men decided that Rodgers should join AFI as president and that the bank should pursue a new business model that would exploit new delivery channels for home mortgages.



HOME A LOAN: Jack Rodgers found that taking mortgage applications online reduced the cost of processing a loan from $3,000 to $1,000.

In those days, new delivery channels meant telephone sales. The idea then was to eliminate the costs of lengthy meetings, as well as the costs of leasing a suitably impressive office space with suitably impressive office furniture and suitably impressive potted plants. AFI set up a toll-free number and hired three salespeople, and within a year, the amount of loans tripled from $50 million to $164 million.

No sooner had AFI started to take off than a delivery channel that was far more promising than telephone sales presented itself. The Internet, Rodgers realized, could eliminate more than the cost of office furniture and potted plants. The Net could cut the cost of people.

Since the summer of 1995, AFI has invested more than $1 million in its Web site, *www.loanshop.com*. About $250,000 has gone to hardware, and the rest has gone to consultants and to the four full-time technical staff who keep the site up to date.

The site, which is visited by 10,000 people a week, has all of the practical attractions that a Net-savvy borrower might expect, including amenities such as borrowing limit calculators and payment schedules. There is also a secure loan application form. "We check the credit history electronically," says Rodgers. "It usually takes about half an hour to give the customer a preliminary decision."

Once a credit history passes muster, says Rodgers, the applicant is asked to fax or mail the required paper documentation of such

Lack of Speed Kills

The insurance industry isn't exactly a poster child for technological innovation, and the Internet hasn't changed that. Only 1 percent of American insurance companies with Web sites currently sell policies online, according to a recent study by Booz Allen & Hamilton, and only 30 percent expect to do so by the year 2000.

That's a pretty risky stance for an industry that lives by risk, says Gil Irwin, the Booz Allen partner who supervised the study. "The Internet could cut costs across the insurance value chain by more than 60 percent," says Irwin. "Most of that savings would be in distribution and customer service."

According to Irwin, companies that sell policies online will undercut traditionally priced products and threaten slower-moving insurers' profitability. At least until someone comes up with a policy that covers bad business decisions. ***–Johan Gustafson***

PHOTO BY WALTER P CALAHAN

things as paycheck, bank statement and last year's tax forms.

While that is happening, the site's intelligent agents are busy routing applications and even recommending what the loan officer should do. Everything that can be done electronically is, says Rodgers, or at least soon will be. He is now installing a filter that will analyze and respond to most of the 1,000 e-mails he gets each day.

"We have done about 50 percent of the automation that is possible for a mortgage bank," he says. "We can't be totally electronic. This business is too dynamic for that."

Tasks such as appraising the property that a mortgage will pay for must still be done by humans, but at AFI, the borrower can get a mortgage without ever meeting his broker.

And true to Rodgers' expectations, the Web site does eliminate costs. Rodgers estimates that the automation cuts the cost of processing a loan from $3,000 to $1,000, and he says that some of that saving is passed on to customers. "The technology improves our ability to provide the same service as our competitors," he says.

That competitive advantage seems to be paying off. Last year, the Web site brought in 60 percent of AFI's business, which had grown to $450 million in loans. This year, Rodgers says he expects to loan $650 million.

There are even benefits that Rodgers didn't count on. The demographics of Web users are different from those of borrowers who are likely to call an 800 number. The average AFI loan is now $146,000, compared to an industry average that is just less than $100,000. And because AFI's revenue is based on a percentage of the money loaned, the more AFI lends, the more the company makes.

Late last year, AFI's Web success impressed a company that has been making loans for a long time. In December, the century-old Virginia First Savings Bank bought AFI, hoping to get a jump on banking for the next hundred years.

–Johan Gustafson

The Do's and Don'ts of Creating an Intranet

USE OPEN STANDARDS IF YOU CAN
Unless using a proprietary application is the only way to obtain a mission-critical function, take advantage of the Web's open standards, scalability and flexibility.

DEVELOP A UNIFIED CONTENT MODEL
Build an infrastructure that will allow you to integrate Internet, intranet and extranet development efforts. Your different Web projects aren't mutually exclusive.

STRIVE TO BE WEB-BASED, NOT WEB-ENABLED
Tie your legacy systems into the Web if you can, but if you're building systems from scratch, use the Web as your foundation—it will reduce compatibility problems.

LOOK PAST TRADITIONAL USES
While the Web is fine for sharing completed work, use your intranet to support collaboration and communication around works in progress.

LET IT GROW, LET IT GROW, LET IT GROW
Start small and expect your intranet to expand and evolve over time. Try not to stifle growth by forcing the Web on your company from the top down. Let the users fuel its growth.

DON'T FOCUS NET DEVELOPMENT ON JUST A COUPLE OF APPS
Instead of using your intranet only to distribute health-care benefits information and the company newsletter, use the Web to open and support relationships between clients, co-workers and customers.

DON'T UNDERESTIMATE THE NEED FOR NETWORK CAPACITY
Increasing file sizes and adding new types of files such as images, sound and video can seriously affect response times. Don't let your company get caught in a choke hold.

DON'T SHORTCHANGE THE RANGE OF MANAGEMENT TASKS
It's a mistake to ignore network and systems management techniques until you hit a brick wall or a hurdle. Traditional host-environment management methods can improve your intranet's reliability.

DON'T LET YOUR INFORMATION AGE
Old news is bad news. Don't let enthusiasm flag once the intranet is deployed. Intranets gain value when their information and applications are fast and fresh.

DON'T TRUST THE ORG CHART
While most intranet teams include a sponsoring senior manager, a webmaster and a support team to develop and deploy intranet applications, including an additional mediator can help work through turf wars between different departments involved in the project.

SOURCE: *Intranet Partners Inc.* (www.ip.com) *and The Intranet Institute* (www.escal.com)

ILLUSTRATION BY OCTAVIO DIAZ

Get Personal

DIGITAL TECHNOLOGIES affect information, but more importantly, they affect people. Specifically, they affect the relationships between people and organizations, according to Michael Schrage, MIT research associate and Merrill Lynch Forum Innovation Fellow.

In his recent Forum white paper, "The Relationship Revolution," Shrage concludes that "to say that the Internet is about 'information' is a bit like saying that 'cooking' is about oven temperatures. It's technically accurate but fundamentally untrue. The so-called 'information revolution' is more accurately, a 'relationship revolution.'"

What does that distinction mean for corporate America? Plenty, according to the author.

"Companies can use the Web to foster better relationships, says Schrage. "They can design their intranet, for example, to encourage conversations rather than just answer questions.

"Employees in some organizations post their PowerPoint presentations on the intranet. Go the next bloody step. Insist that when somebody posts a presentation, they write down what the reactions to their presentations were and what advice they'd give to somebody using their slides. Then the condition to somebody using these slides is that they have to add their comments, promoting an interaction for relationships."

Looking outside the organization, Schrage says companies should use Web sites to enhance their relationships with customers and suppliers. "If companies adopt a more relationship-oriented design, they will discover their best customers are willing to pay a premium because they like the quality of their relationships," says Schrage. "Their best customers will become less price-sensitive and more value-sensitive."

–Jennifer Bresnahan

Cereal Killer

"There was a time when people thought 'fiber to the home' meant Raisin Bran."

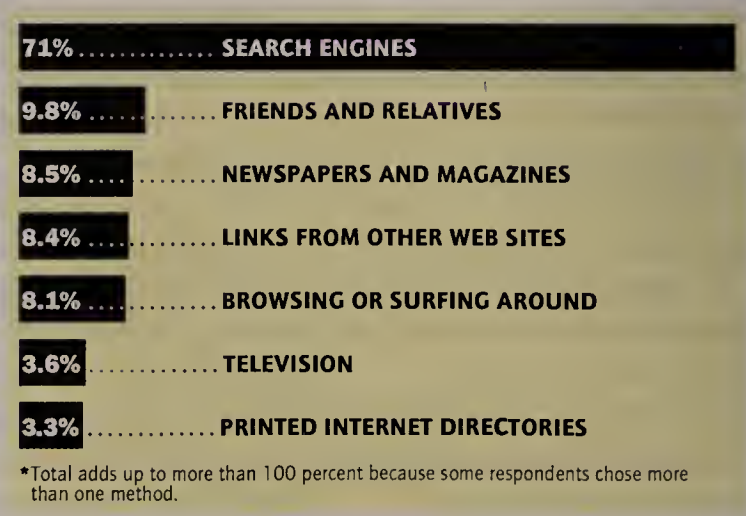
Vinton Cerf, senior vice president, Internet Architecture and Engineering, MCI Communications Corp.

Search Me

Everyone knows that search engines are the most popular place to promote Web sites. The question is, is it worth promoting them anyplace else?

A recent survey by the CommerceNet Consortium and Nielsen Media Research found that most frequent Web users turn to search engines when they want to find something. That casts doubt on the value of advertising a Web site in other media, joining link exchanges and using print Net directories.

Here's what the study, which asked people what led them to most of the Web sites they visited, found:



*Total adds up to more than 100 percent because some respondents chose more than one method.

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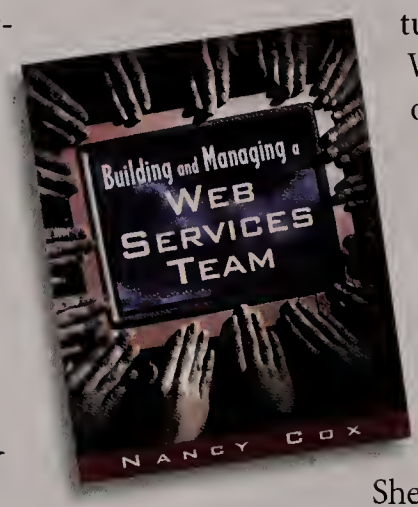
Off the Cybershelf

THERE ARE PLENTY of places to turn for information about how to design and develop a Web site or intranet, how to configure your company's server and firewall, and what to do with all the information and functions that your enterprise wants to offer online. But materials about Web team staffing, staff management and interdepartmental conflict resolution are few. That's what makes Nancy Cox's *Building and Managing a Web Services Team* (Van Nostrand Reinhold, 1997)—the first book to hit our desks claiming to cover Web team management—so disappointing.



Cox's book is not about teams at all. It's about technology.

The author does lay out a well-informed game plan for companies just turning to the Web, and she offers an interesting discussion of the different ways organizations can open access to content on the Internet.

She also details—painstakingly, if not painfully—the various vendor offerings and the technical specifics of Web server software; firewall server software; TCP/IP networking software; Web hosting services; and Web statistic, billing and accounting products and services.

What she doesn't cover in depth is what the book sells itself on in the cover and jacket copy: how to sell Web projects to upper management, how to manage relationships with outsourcers, how to fit Web and intranet development (and staff) into your IS strategy and how to manage the cross-functional team of people providing information and expertise to build your corner of the Web.

If you need a book about finding Web service providers and the technical side of getting your company online, Cox's book is a good basic primer. But by focusing her attention on positions and technologies instead of on people and team building, Cox appears to forget that there are people behind the buzzwords and product boxes. Don't make the same mistake. –*Heath Row* WM

Please Deposit $225 Million

Projection of international-calling revenues from business customers lost by AT&T Corp. to Internet phone and e-mail in the year 2001: $225 million.

SOURCE: *Phillips Tarifica Ltd.* (www.tarifica.com)

Inside Outsourcing

***Web & New Media Pricing Guide* (Hayden Books, 1996) may not sound like strategic reading, but it's a valuable resource for anyone needing to negotiate and/or manage a Web outsourcing relationship. Professional Web and new-media developers J.P. Frenza and Michelle Szabo not only zero in on the bottom line of Web work but also demystify a new and—to some—exotic business service. While the book is intended to help fledgling Web developers get their shops in order, companies that send out for their Web development and management work can use it to learn:**

- ✔ **How Web developers write business proposals;**
- ✔ **How they develop pricing models and project budgets;**
- ✔ **How they break down and invoice time spent on design, and production, programming, project and client management; and**
- ✔ **What executives at organizations such as MasterCard International Inc., iVillage Inc. and *Interactive Media* have learned from working with—and for—Web and new-media developers.**

Armed with all that information, companies can turn the decision to outsource into the start of a beautiful friendship.

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Don't Show Me the Money

A GLOBAL VILLAGE SWAP SHOP THAT LETS USERS PAY WITH WHAT THEY DO BEST

BY JENNIFER BRESNAHAN

LET'S GET IT RIGHT OUT IN THE OPEN: Hiromi Amano makes no money for his work with the Global Village Bank. Nor does he plan to. In fact, the mere mention of charging for subscriptions or accepting corporate sponsorships and advertising sets him off on a defensive diatribe about staying true to his principles.

Amano's 16-month-old nonprofit venture, the Global Village Bank (GVB), aims to remove what he considers the outdated concept of money from the Web economy. Instead of relying on money, Amano, a Tokyo resident, envisions a world in which individuals exchange skills and services over the Internet using a new currency, the nella (named after the money used on an island featured in a Japanese comic book). In Amano's utopian economy, trade will thrive without the involvement of corporations and middlemen or the security risks associated with transferring real money online.

The GVB (*www.gvb.org*) was born out of Amano's frustration when he went looking for technical advice on the Internet after buying his first computer two years ago. "I somehow managed to figure out how to get e-mail messages going," says the 28-year-old former translator for a construction engineering company. "But when I tried to do some funky stuff, I'd just get this blank screen. And all I got when I typed 'help' were shell scripts, Pine, editors, paths and lots of other ghastly concepts I knew nothing about."

Without a credit card, Amano discovered, he couldn't buy the information he needed—even if it were available. Then it occurred to him that he himself had at least one expertise that others might wish to buy. For example, his Japanese language proficiency might appeal to the "Japanimation freaks" who frequent the 30,000 U.S. Web sites about anime, or Japanese animation.

"They often come across a little bit of Japanese they don't know the meaning of and waste an enormous amount of resources and time trying to get the information," he says. "That is so simple for me to answer."

Wouldn't it be wonderful, thought Amano, if he could trade his specialized skills for the specialized skills of others? He searched the Web and found no mechanism for enabling such a transaction. "There was all this talk of a virtual community, but I couldn't see it," says Amano. "Wherever you go, people are throwing out questions in all directions: Where can I get such and such software? What do I need to run this and that? A guy might have a Web site on concrete with lots of information and links about cement, mortar, reinforcing, curing, etc. But if I need to know the name of the process whereby steel reinforcement is shredded instead of gridded, which the author is likely to know or could find much faster than I can, there's no social matrix in place to facilitate the exchange."

To fill that need, Amano came up with a plan inspired by the Labor Exchange programs that existed in England during the 1980s, in which hundreds of people in a village would swap their skills and services. A chair maker, for example, might give his wares to the local beekeeper, who would provide honey for the dentist, who would care for the teeth of the chair maker's children, and so on. The exchanges would be debited and credited by a registrar acting as a central bank. "It's not exactly barter, because in the case of barter, you have to find somebody who has a product that you want and who wants your product as well," says Amano. "The whole point here is you have a central place to facilitate trade."

"The whole point here is you have a central place to facilitate trade." —Hiromi Amano

The key to translating this system to the Web was to keep it simple. Skill owners—a Java programmer, say, or a professional matchmaker—price their services at any number of nella they see fit. Someone needing their skills transfers nella from their own account into the

PHOTO BY MAMORU TSUKUDA / LIAISON INTERNATIONAL

WEALTH OF KNOWLEDGE: Hiromi Amano wants people to think of themselves as information providers.

provider's account, managed by the GVB.

To get the project rolling, Amano solicited help from some buddies, including his partner, New York-based cyberneticist and graphic artist Usman Haque. A group of hippies, says Amano, living in rural California, provide server space and technical assistance for free. The hippies, in fact, make up a company called ASIS TeleMedia (*www.asis.com*), whose services include dial-up access to the Internet, Web publishing, hosting and consulting.

THE GVB WAS LAUNCHED IN March 1996. At first, only about 10 people per month signed up, and Amano quickly realized that labor exchange in cyberspace is different from that in a rural village. "I didn't understand the mechanics of running a huge project," he says. "The site wasn't automated, so it took weeks for me to process the registrations by hand. It was incredibly stupid."

Another mistake Amano made during what he calls this "embarrassing but necessary first chapter" was promoting the GVB as a community and including chat room functionality. While many experts recommend that approach as a way to increase traffic, in the case of GVB, it backfired by attracting people more interested in entertaining themselves than participating in a skills exchange.

Amano then tried providing participants with "nella accepted here" banners for their Web sites so that when GVB members stumbled across one another, they could initiate trades on their own. But "cyberspace is way too huge for that to happen," says Amano. "With 30 million users, the chances that two people would bump into each other were basically zero."

A year later, with participation still negligible, Amano decided to refashion the GVB to better reflect his vision. Four months ago, he launched the new and improved service, complete with the Nella Pages, a categorized list of cyberbusinesses run by GVB participants. Actual exchanges won't begin until 1,000 cyberbusinesses are signed up, a milestone Amano expects to reach this summer. As of May, there were about 550 members with skills as wide ranging as Web development, graphic design and tutoring.

In GVB's second incarnation, Amano has added an online ATM that transfers nella between members. But the principal challenge has not been technological, he says. Rather, it has been figuring out how to assign value to knowledge and services. For the most part, people have kept their prices reasonable because they know that new cyberbusiness registrants receive only 50 free nella to start out with, says Amano. A translator, for example, might charge one nella per 25 words. Any conflicts that arise over unsatisfactory goods will be resolved by the participants themselves, or they can hire a nella transaction arbitrator or cyberlawyer registered with the GVB.

To Amano, the GVB is an insurance policy for intellectual exchange over the Web.

"It comes down to how do you merchandise and make available for purchase something as intangible and air-like as information?" says Amano. "Instead of selling the information as databases or giving it away free, our suggestion is that people become information providers." WM

Senior Writer Jennifer Bresnahan can be reached at jbresnahan@cio.com.

An Ad of One's Own

INFOSEEK'S CUTTING-EDGE TECHNOLOGY DELIVERS ADS TO THE MOST RECEPTIVE EYEBALLS

BY JIM STERNE

Wow. It's been a while since I felt my hair (what's left of it) stand on end. No, I didn't have my hands on a Tesla coil. I was sitting in a micro-office in the middle of Infoseek's booth at Internet World this spring, listening with rapt attention to Peter Rip, vice president and general manager of Infoseek Network. He was talking about the very near future of advertising on the Internet.

Advertising has come of age on the Web. We've progressed from getting flamed for launching commercial Web sites to getting bombarded with offers to buy banner space. And while there are many effective ways to get your message out besides banners, banners are starting to get smart.

Yes, you can go to DoubleClick (*www.doubleclick.net*) and buy space across a whole network of Web sites to target men in the 18-to-24 age range by ZIP code who are surfing from .edu domains and sell them condoms. You also can buy a banner on Women's Wire (*www.womenswire.com*) to promote home pregnancy test kits. If you do, your click-through response will go from the usual 1.5 percent up to 3 or even 5 percent, according to the people at ad network companies such as Petry Media Corp. and Interactive Imaginations Inc.

You also can buy keywords on search engines. You want to advertise a marathon on Maui? Buy the words "marathon," "Hawaii," "Maui" and so on. Doing so will increase click-throughs significantly.

But what if the ads themselves were smart? What if a banner ad knew who might want to see it? In that case, you'd have a bit of a content/context revolution.

ILLUSTRATION BY ROBIN ZINGONE

Infoseek Gets Ultra Smart

RIP TALKS WITH the urgency associated with a major discovery tempered with the strain of having to explain it—again. In a nutshell, Infoseek can now know—without violating users' privacy—what users like and what kind of ads they are most likely to click. That raises the same question that was asked of Napoleon when he described a thermos that could keep hot things hot and cold things cold: How does it know?

Infoseek's new technology—called Ultramatch—starts off with 300 micro-interests spread across 22 behavior segments. A behavior segment is a broad area of interest such as computers, entertainment, health, the outdoors or real estate. A micro-interest is a subset of those categories, such as soap operas or lacrosse. Users are categorized according to which subjects they seek on the Web. Their interests are identified by actions rather than by declaration. Infoseek watches while they surf.

Say a user goes to Infoseek and searches for "airfare." The engine then gives her a cookie that identifies her as somebody interested in travel. She proceeds to one of Infoseek's partner sites—to which the company delivers ad banners—and clicks on an ad for a Hawaiian vacation. Later, she searches for information on sporting events. At each step, her behavior pattern is crunched into a digital profile that Infoseek slips back into her cookie. The next time she goes to an Infoseek partner page, Infoseek reads her profile and selects a banner to show her—an ad for a marathon on Maui.

Before privacy hormones start coursing through your veins, rest assured that Infoseek is tracking the user's profile—not the user. The company knows what she is interested in but not who she is. It doesn't know her name or her e-mail address. It knows what sites she went to, but that information is added to her profile and then discarded. Yet because Infoseek knows her likes, it can give her a banner

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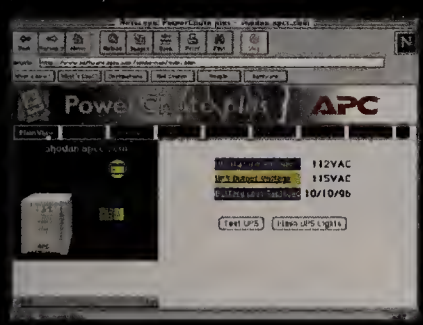

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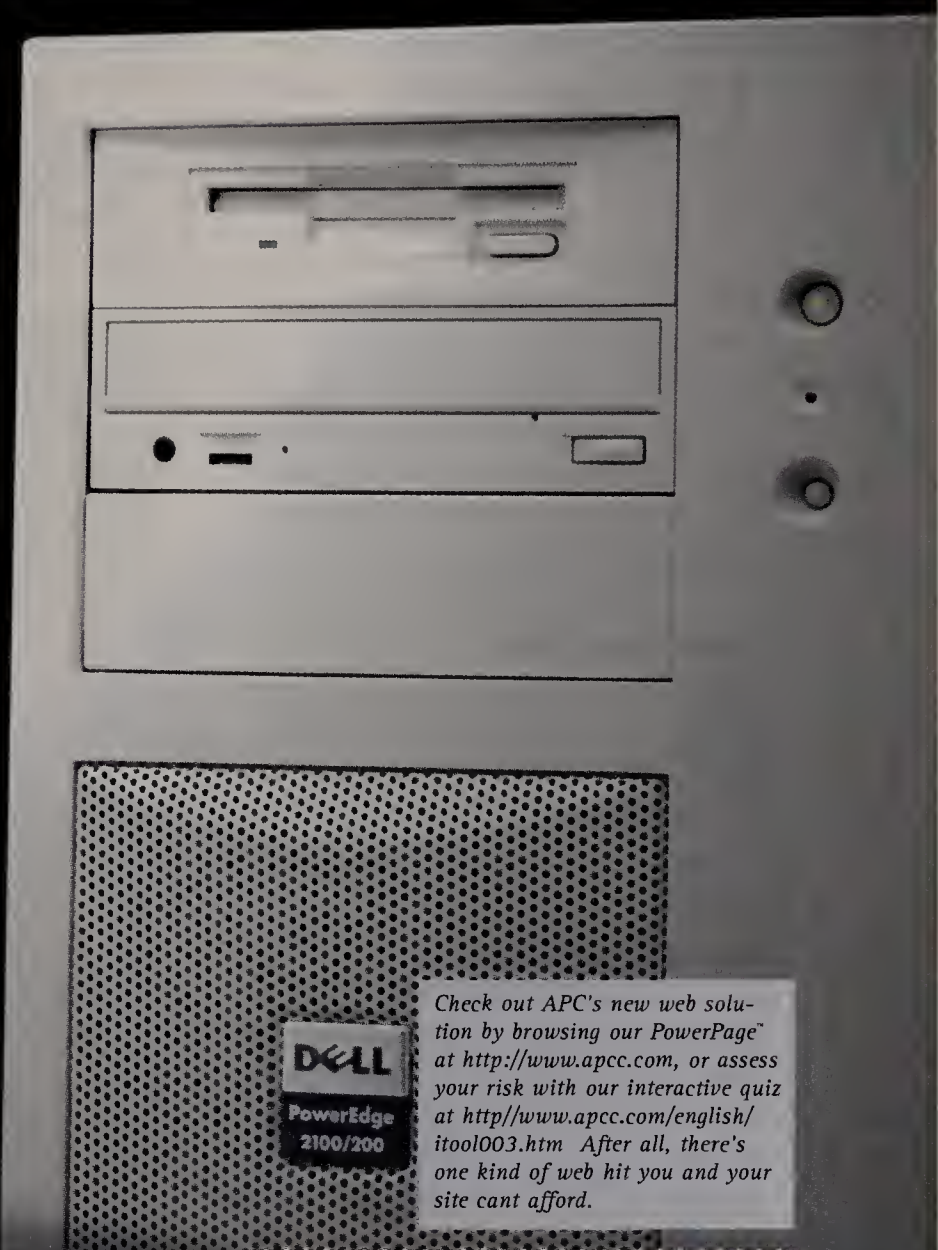

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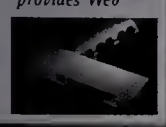

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that she is likely to click.

As a result, the user sees more ads that speak to her interests. Users should like going to the Infoseek site because it's sponsored by companies offering stuff that is right up their alleys. The other search tools just have regular, run-of-the-mill ads.

The result for the advertiser is less waste. You buy 1 million ad impressions and you get 1 million people who are likely to be interested in your products and services. The 8-year-old doing her homework on the Hawaiian Islands won't squander one of the impressions you paid for.

Really Smart Ads

But Infoseek doesn't stop there. Using automatic collaborative filtering, the technique pioneered by Firefly Network Inc. (*www.firefly.net*), it can actually imbue an ad with intelligence.

Firefly recommends things such as movies by comparing a user's stated likes and dislikes to the stated likes and dislikes of a database of others. Infoseek's innovation was to ask: Why not do the same with the unstated—but exhibited—behavior of others? Lots of others?

A banner ad is thrown into the profiling machine. Based on the ad's content, Ultramatch makes some educated guesses about who might want to view it. The software then starts showing the ad around. Over a surprisingly short period of time, it builds a database of the profiles of people who have clicked on that banner. The result? Ultramatch knows what types of behavioral profiles represent people who are most likely to click on that ad. Not just that type of ad, ads about that subject or ads with that type of offer. That specific ad.

And once it knows, it takes action. When the next person with that profile calls up a page on the Infoseek network of sites, Ultramatch reads the cookie, matches the profile to the ad and ships it off. In milliseconds.

The software that runs Ultramatch was adapted from the code that checks someone's credit card history when he makes an unusual purchase.

"Mr. Sterne? You don't usually spend $10,000 in a single month on air travel. Has your card been compromised?"

"No, I just have a lot of flight time ahead of me and bought a bunch of tickets. But thanks for checking."

That technology has been in place and working for years. It scales.

What if a banner ad knew who might want to see it?

Value Adds

The bottom line is that exhibited behavior is a far more reliable gauge of future behavior than anything an individual might say on a profile form. Giving users an ad that people similar to them have clicked on dramatically improves the chance that they will click on it too.

How dramatically? In a six-month trial on its site, Infoseek measured a split run. Users exposed to the usual rotation of banners clicked the usual number of times (1.5 percent for random ads; 3 percent for keyword-selected ads). Those targeted by Ultramatch had a 25 percent higher click-through rate. When Ultramatch was coupled with the use of keywords, the results were even more impressive. In some campaigns, Infoseek experienced a click-through rate of 9 percent—better than anything on the Web this side of "download naked pictures here!"

For example, those seeking information about teens, kids, college and shopping clicked enthusiastically on the Columbia House Records banner reading, "7,000 Reasons To Stay Home Tonight." People seeking information about entertainment, travel, science and computers—presumably upscale types—were tempted successfully to "click here to check out over 100 beef recipes."

That sort of tool points you toward people who have a demonstrated proclivity for clicking on your offer but who don't hang out in the obvious places. With it, you can reliably test which banners work and which don't.

There are two problems with the Ultramatch approach. First, people who don't like cookies can blow them away. But that is a small threat to marketers: Recent studies show that only 25 percent of the browsing public has ever even heard of cookies. (And once enough people do know about them, it won't take Madison Avenue long to kick off a "Got cookies?" campaign.)

The other concern is legislative. Some people worry that aggregated behavioral information could potentially invade the privacy of registered voters. Heaven help us as the government embarks on the long process of legislating technology that changes on a weekly basis. That cat, however, has already escaped its bag. Databases have been used by marketers for decades, and now those marketers will be able to talk to each other.

There is every expectation that Ultramatch technology will be applied to content as well as to ads. The ability of a search engine to learn about users' tastes and interests has interesting implications for finding things on the Net. In the hands of marketers, "Where do you want to go today?" becomes "Where you want to go today." WM

Jim Sterne (jsterne@targeting.com), *president of Target Marketing of Santa Barbara, is an Internet marketing strategy consultant and the author of* World Wide Web Marketing *and* Customer Service on the Internet.

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NOTICE TO CORPORATE INTERNET PLANNERS: MICROSOFT HAS YOU IN ITS SIGHTS **BY MIKE CARIFIO**

Giant Steps

Whether you love or hate those guys in Redmond, you can't afford to ignore them.

Microsoft Corp. now understands the importance of the Internet and has developed a comprehensive product suite to use it. With sustained effort, Microsoft has been catching up to Netscape Communications Corp. in the so-called "browser war" and has pushed its competitor into the broader area of Web collaboration. The Netscape browser remains superior to Microsoft's Internet Explorer in many ways, including raw performance.

But Microsoft is leveraging its ace in the hole—desktop integration—to build the Web browser right into the desktop shell by unifying Windows and Internet Explorer into the ActiveX desktop. With a little architectural judo, Microsoft has eliminated the need for a separate browser. The desktop is the browser. Game, set, match.

Against the yin of browsing comes the yang of content creation. Office 97, the latest version of Microsoft's Office suite, is ready for the Internet and for prime time. Word 97 generates HTML and GIF images well enough that the casual user probably can forego learning HTML. Excel spreadsheets can generate workable HTML tables. PowerPoint can generate browsable slide sets. As a result, authoring no longer takes special skills. Suddenly, Joe in accounting, Nancy in sales and Ken from human resources can all be Internauts, too.

Moreover, because the Web is not constrained by geography, Microsoft has poured money and time into distributed authoring with FrontPage 97 and "high-end" content creation—that includes code—with Visual InterDev. Some estimates of the Office installed base approach 100 million seats worldwide, and many of those seats are wired to the network. If your site already is using Office and you're looking to develop your company's intranet strategy, start here.

ILLUSTRATION BY JIM DEACON

The Internet, surprisingly, has shot new life into Microsoft's workhorse language, Visual Basic. Although Basic's history reaches back more than 30 years and retains vestiges of the past (such as the unfortunate label "DIM" for defining variables), it is finding new audiences as a scripting language for the Web. Despite Microsoft's love affair with Basic—it is the first product the company sold—it has taken a pluralistic and shrewd approach by adopting Java with equal vigor (Sun Microsystems Inc.'s claim to the contrary notwithstanding).

The greatest impact of Visual Basic, paradoxically, may have very little to do with the Web. The entire Office 97 suite is now programmable in a variant of Visual Basic—Visual Basic for Applications—that gives programmers and power users the opportunity to write simple, customized macros in something approaching a real programming language. Unix users have long coveted this customizability and, provided they can get over their Basic snobbery, may find a rich toolset with which to play.

The basic technology that provides that kind of integration and programmability is not Basic, of

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course, but something more fundamental and powerful: component object technology. One of the chief objectives of object technology always has been the reuse of components, especially larger components such as applications. Microsoft has slowly developed its version of that technology over the last decade, changing the name—but not the end goal—along the way. The browser wars are a small skirmish compared with the upcoming battle between the two superpowers in this area: Microsoft's ActiveX and Sun's JavaBeans. Microsoft's implementation is rich and robust but runs only on its own platforms. JavaBeans is more open and enjoys a cleaner interface with the Java programming language.

While Microsoft's bread and butter has been desktop applications and operating systems, Unix continues to excel in the quality of its development environments and big iron—servers and middleware. But Microsoft has accelerated its investments in these areas, and its products are now ready to take on their Unix counterparts. Although the jury is still out on this, the Microsoft camp appears formidable.

Middleware products—mail servers, directory servers, distributed file systems and database servers—are often harder to install, configure and maintain than desktop products. Microsoft really hasn't fixed that—yet—but continues to work at it unrelentingly. Putting a Windows NT workstation on the LAN is now easy enough for the average software developer. Pretty soon, Microsoft will make it easy enough for everyone else. Because Microsoft has often sold its products to end users who don't understand—or don't want to understand—the underlying complexity of the product, the company has spent a lot of time and effort developing good tools for installing software. If you can't dedicate someone to feed and nurture your computing environment, then the Microsoft solution can look tempting.

In the last year, the Microserfs have created an entire family of server products. That includes, of course, their own Web server, which in version three can evaluate Visual Basic or Java on the fly. The company has been beta-testing a distributed file system, a directory server that supports the Lightweight Directory Access Protocol (LDAP), a messaging server (Exchange), a transaction server, a proxy server, a firewall, an indexing tool suitable for Web sites and the desktop, and a commerce server for taking orders over the Internet. Microsoft also has embraced at least some version of such Internet standards as HTML and HTTP, multipurpose Internet mail extensions (MIME) and simple mail transfer protocol (SMTP) for mail, LDAP for directory services, the distributed computing environment (DCE) for middleware, the simple network management protocol (SNMP) for network management and TCP/IP for networking. The list goes on. And the company has written its own share of RFCs (request for comments), the Internet method for proposing standards.

Because Microsoft has embraced and implemented the popular Internet protocols and their servers, Windows NT—nicknamed "the Unix killer" early in its life—may now have a sufficiently level playing field to engage its opponent. Because many of the servers in the Microsoft stable are still colts—many are version one products—their performance tends to be slower than their Unix counterparts. But one can imagine the server scenario playing out in the same way the scenario for desktop products did.

Many organizations, especially those that lack a strong Unix culture, are betting this will happen and are consequently planning transitions to the Windows NT server (either this version or the next, when fault-tolerant clustering technology will debut).

But Unix vendors (plus Netscape) have not stood still. The moribund common object request broker architecture (CORBA) proposal has suddenly taken on new life as an alternative to Microsoft's distributed common object model (DCOM) standard. The combination of Java and CORBA might actually give DCOM a run, if Sun can keep the usually fractious Unix vendors in line. Moreover, Sun is relentlessly applying the thumbscrews to Microsoft on the "openness" front: Almost all of Microsoft's products run best—sometimes only—on Microsoft systems and Intel processors. Wasn't that once called "proprietary"?

One can imagine the server scenario playing out in the same way the scenario for desktop products did.

Still, Microsoft's efforts over the past two years have resulted in alternatives to Unix for its enterprise customers, especially in the area of Web server and authoring tools. Consequently, the cost of ownership is going down on both platforms. Buyers have more choices, and new technology, long discussed, is making its way to market. For that, you have to love those guys in Redmond. WM

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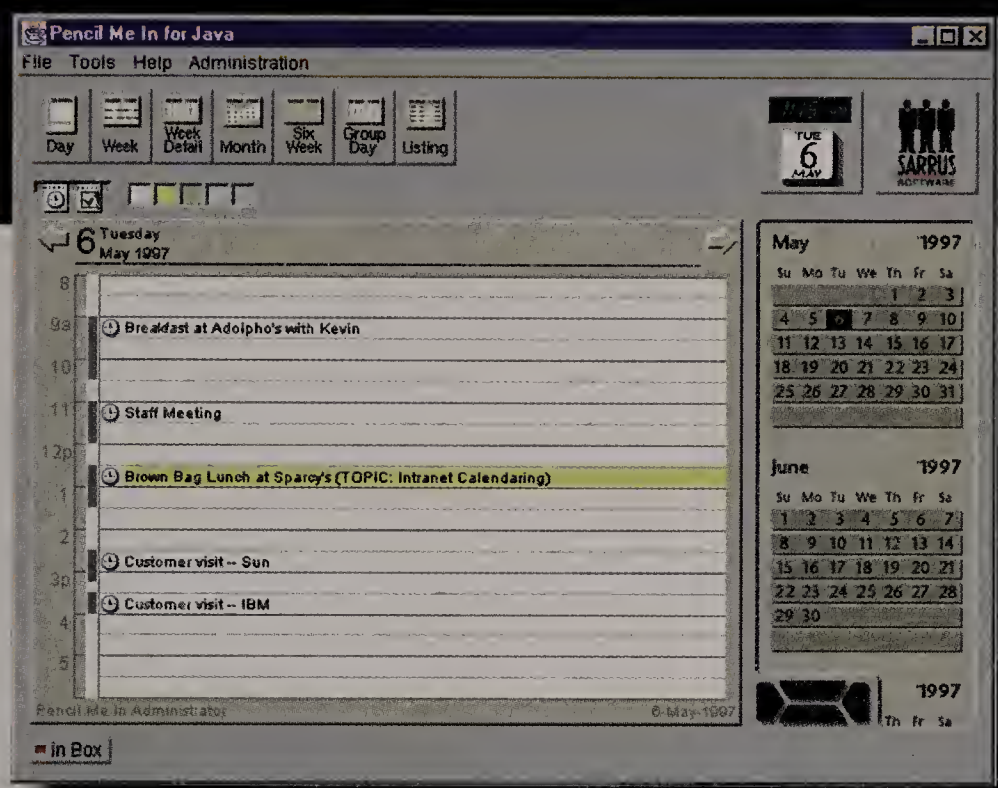

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So Many Ideas,

Owens Corning's Web team members had lots of big plans for their corporate site. Trouble was, they were all different.

BY JENNIFER BRESNAHAN

TOLEDO, OHIO, has just about the friendliest taxi drivers you'll ever meet. On the 30-odd-mile trek between the airport and town, they'll regale you with descriptions of their beloved city's high points. Did you know, for example, that Toledo has one of the largest collections of glass art in the United States? Or that it hosts the biggest conventions for fans of remote-controlled cars and airplanes? Toledo also lays claim to the title of U.S. city with the most restaurants per capita (although driving through the near-abandoned downtown at 7:30 p.m., you'd be hard pressed to believe it).

One Toledo asset the drivers don't generally mention is Owens Corning (*www.owenscorning.com*), or "OC," as it is affectionately known by the local populace. Sandwiched between the main drag and the Maumee River, this $3.8-billion manufacturer of building materials, pipe and glass fiber is noteworthy for a number of reasons, not the least of which are its global reach and diversified array of products, including patented pink insulation and the glass composites used in more than 40,000 composite products ranging from skis to fiber optic cables. But Owens Corning is also of interest to companies creating Web sites because its experiences exemplify the cross that cross-functional teams and the individuals who lead them must sometimes bear.

It's obvious, of course, that Web efforts make bedfellows of IS and marketing. But as the Web's functions and benefits become more evident, marketing and IS aren't the only ones fighting over the blankets. Increasingly, cross-functional Internet or intranet teams involve everyone from the CEO to employees from manufacturing or accounts receivable. Outside organizations such as Web development companies and advertising agencies frequently play a part as well.

Despite the warm words of praise Web team members heap on one another in public forums, these new work relationships generally don't lead to weekend barbecues and invitations to become godparents. Rather, the process of hammering out a site's purpose, scope and design among people with different agendas and backgrounds can be a frustrating experience. No one knows that better than the Web champions at OC.

It all began with Craig Landwehr, OC's technology application leader for marketing services and the protagonist of our tale. A jack of many trades—he was a mechanical engineer, marketing MBA and, most recently, a five-year IS veteran—Landwehr wasn't terribly knowledgeable about the Web when he became OC's first webmaster equivalent. But he did have a passion for it.

In fall 1995, Landwehr and a few of his colleagues began discussing a redesign of OC's existing site.

PHOTOS BY DAN INGERSOLL/AGI PHOTOGRAPHIC IMAGING

So LittLE Site

[illegible] coming [illegible] mailing containing mostly financial [illegible] that had been launched by the [illegible] and [illegible] years ago. The group concluded [illegible] was too expensive and convent-like that it would open to [illegible] unwrapped machines. Several interns and [illegible] were ready to present that vision to OC's [illegible] Glen H. Hiner.

[illegible] would require a substantial investment, but Landwehr suspected that most of OC's executives weren't familiar enough with the Web to understand its potential value. To educate them and drum up [illegible] Landwehr's group dubbed a special "Internet Day" during which the Web was demonstrated to Hiner, OC's [illegible] vice presidents and seven executive vice presidents on a [illegible] Landwehr's group spent the evening [illegible] Internet Day making sure the network [illegible] results. Hiner, [illegible] bent on dragging his company into the 21st century, was impressed. Convinced of the Web's potential, he granted Landwehr's request for a $[illegible] budget.

[illegible] remained apprehensive about the [illegible] the potential personnel security risks [illegible] and, above all, the possibility that "Owens Corning would embarrass itself out there," recalls Landwehr. Inadequate as OC's current site was, at least it was a known quantity that didn't jeopardize the company's image.

The initiative's timing, falling as it did in the middle of a whirlwind of change, was perfect. Prior to Hiner's arrival in 1992, OC hadn't introduced a new product in 10 years. Under his leadership, the company began [illegible] product introduction. [illegible] programming in [illegible], the Pacific region, Canada and Latin America. Meanwhile, employees in Toledo were getting used to [illegible] from a [illegible] to funky, [illegible] quarters across the [illegible] and [illegible] battery [illegible] all were being [illegible]

HEADWEAR: Owens Corning's [illegible] got five additional [illegible] and $300,000 from Landwehr's Internet's [illegible]

forts to prepare for business in the next millennium.

With Hiner's uneasy blessing, Landwehr began assembling the core Web design team. Among the first on board was Karen L. Strauss, director of marketing communications for building materials sales and distribution. Strauss was the left-brain counterpart to Landwehr's right-brain approach, says Landwehr. Charged with protecting the OC brand, she envisioned a bold, splashy site that departed from the company's traditional conservatism.

"We were far too analytical and verbose [the first time around]," Strauss says. Her basic concept fit with that of fellow team members David McGuinness, a vice president of production at Internet business solutions provider Proxicom Inc. (*www.proxicom.com*), and Jeff Durski, vice president and management supervisor of advertising agency Fahlgren Inc. (*www.fahlgren.com*). Despite their agreement on the goals for the site, each team member added his or her own spin.

McGuinness, whose company was commissioned to provide the Web expertise that OC lacked, favored advanced interactivity with Java and all the latest bells and whistles. He also presumed that Proxicom's extensive Web background—the company had been creating award-winning sites for clients such as the L'Eggs product division of Sara Lee Corp. since 1991— made it the natural leader for the project.

Web novice Durski, on the other hand, figured that Fahlgren would lead the venture because the agency was so familiar with OC's brand image, having worked with OC on its traditional advertising venue since 1994. As far as Durski was concerned, OC should simply duplicate on the Web its existing media and print ads. "If Fahlgren had had their way, they'd have made the whole thing a picture with few words thrown in," says OC's vice president of investor relations, Rhonda L. Brooks, who was at the time vice president of marketing for composites.

A different concept for the site was advocated by the business leaders of OC's building materials division. The division, which is responsible for roofing, insulation and specialty products (and customer service for those products' buyers), was represented by C. Steven Smoot, director of business systems for the North American building materials sales and distribution unit (now director of customer information services). Smoot acknowledges that at the time he had no appreciation for the technological possibilities of the Internet and a "fairly uncreative, functional but professional" vision for the site. In fact, he would have been content to post, word for word, his division's existing product data sheets so that surfers could have access to every bit of information they needed.

Such an approach was anathema to business leaders on the composites side, however; they were leery of posting detailed product information, thinking it would give other companies too much competitive intelligence. Another disagreement arose when Brooks advocated creating a separate URL for the composites pages. Ultimately, Brooks was overruled, and it was decided that OC's "spokes-critter," the Pink Panther, would introduce surfers to OC as a single corporate identity.

After agreeing on the site's structure, the team had to decide who their target audience would be. On the building materials side, OC's biggest customers are the Home Depots of the world; the composites division, meanwhile, caters to businesses that use the company's glass fiber to make new products. Strauss and her marketing group wanted to reach the consumer market, but the salespeople in both divisions expected the site to serve their professional clients.

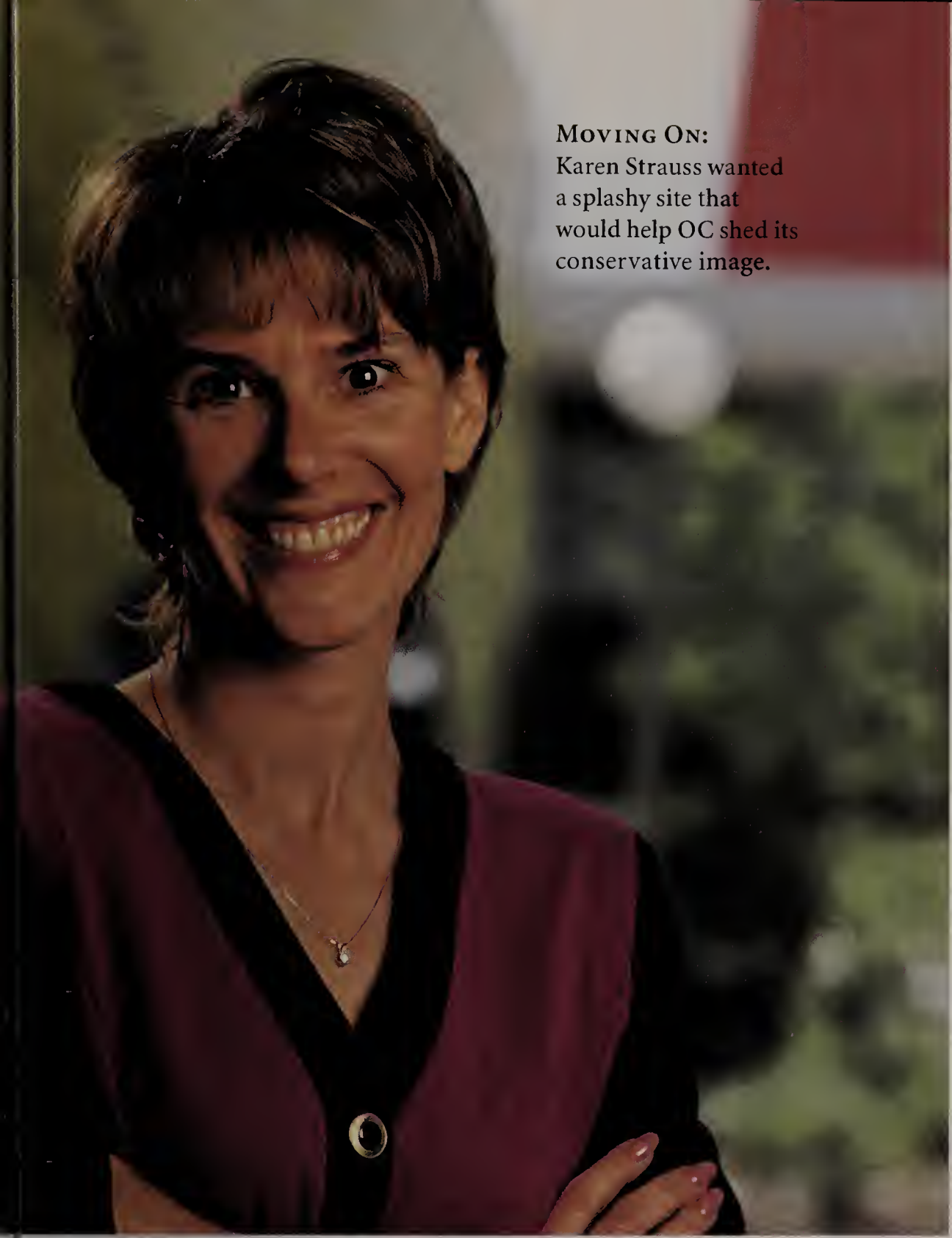
In addition, Database Marketing Specialist Paul Baker, keeper of OC's consumer databases—which are compiled from such documents as request and warranty cards—hoped to use the site to gather as much information about consumers as possible. He insisted that OC would benefit by requiring guests to answer pages of questions. Fahlgren's Durski, on the other hand, was horrified at how that process would encumber navigation and design.

Meanwhile, the salespeople in the roofing and asphalt division weren't sure they wanted their products to be represented on a new site at all. "Roofing is a beauty sell," explains Sue D. Burkett, marketing communications leader for roofing and asphalt. "We spend a lot of money making

Playing Well With Others

Some tips for keeping life pleasant on a cross-functional Web team

- ✓ **Hash out the purpose, scope and time frame at the beginning of the process.**
- ✓ **Stick to deadlines.**
- ✓ **Keep it simple.**
- ✓ **Save more ambitious ideas for future iterations.**
- ✓ **Outsource the technical component.**
- ✓ **Prototype ideas on the Web.**
- ✓ **Schedule socializing and team-building time early in the process.**
- ✓ **Empower the webmaster to make the final call on personnel and resource-allocation conflicts.**



Moving On: Karen Strauss wanted a splashy site that would help OC shed its conservative image.

sure our printed materials reflect the right color of our roofing tiles, otherwise our salespeople get harassed. But the color is even more off on an Internet site."

Convinced at last that each business unit had to be part of the site for it to accurately represent OC as a whole, members of the roofing division wanted the site to be as interactive as possible. For example, they suggested attracting people by offering a calculator that would help determine how many packages of shingles would be needed for a new roof. But that would require that users input the measurements of their roofs, and the plan was dropped for fear that some impetuous customers might hurt themselves trying to crawl on top of their houses with tape measures.

Someone then proposed creating a tool that would let visitors figure out how much insulation to buy for building projects—a less risky activity. The team agreed that building a calculator for the insulation pages was a great idea that should be pursued in a later iteration of the site. At the time, such a project would require too many resources: Certain employees would have to spend many hours calculating algorithms and exceptions (what would happen, for example, if the customer was using metal studs instead of wood or had an eight-foot wall instead of a nine-foot one?).

While most of those people eventually would be called on to participate in the site in some way, the team felt that it didn't make sense to pull them off their regular tasks for the launch effort. They also had to consider people's feelings. OC's employees were still reeling from the changes of the previous years, Strauss says, and the Web site was just one more thing many didn't want to deal with.

Furthermore, Landwehr had to be careful not to overextend his resources or create a shoddy product that would discredit the company. Although Hiner kept his distance throughout the Web planning process, his presence—and concerns—were always in the back of everyone's mind.

One area of consensus: the need for an e-mail query line that visitors could use to ask questions about OC's products and services. Trouble was, the Jacksonville, Fla., company that answers OC's 800-GET-PINK line, AT&T American Transtech Inc. (the company has since changed its name to AT&T Solutions Customer Care), was apprehensive about taking on this new responsibility. And the prospect wasn't sweetened when OC argued that it shouldn't have to pay much more money because its existing contract was sufficient to cover e-mail queries, says Terri Previte, corporate communications leader for the Answer Center and interactive marketing.

AT&T Solutions Customer Care specializes in telephone call centers, and all of its technology is telephone-related. Not surprising, the company didn't relish upgrading its computer systems with e-mail and network functionality on behalf of a single client. In the end, OC paid for the setup expenses, says Karen Barbone, service manager at AT&T Solutions Customer Care. "Even though we are AT&T, this was a different function," she says. "We had partnered with Owens Corning since 1983 but only to offer call functionality, not to manage communications from a Web site."

At the time, few large companies had outsourced their customer e-mail function, so AT&T Solutions Customer Care couldn't benchmark against others to see what such a responsibility would entail. And given the complexity of OC's business, Barbone worried about establishing ways her

Software and Technology

OC's site runs on a Sun Microsystems Inc. Solaris server hosted by MCI Communications Corp. Its customer query function uses Microsoft Corp. Exchange's e-mail program. Other software includes Sun's Java, Macromedia Inc.'s Shockwave and Apple Computer Inc.'s QuickTime VR.

reps could get the questions they couldn't answer to the appropriate OC employees. As always, liability issues were a concern: What if somebody followed the directions laid out in an e-mail and hurt themselves as a result? "We wanted to resolve process and procedures and understand the turnaround time commitments, not only for us but for the people in Owens Corning who would be responsible for answering questions," says Barbone. "We needed to be sure that the process, training and buy-in on the part of OC employees was in place."

Says Landwehr: "Our philosophy was, geesh, if you're answering questions over the phone, you ought to be able to do it over e-mail. But the truth, and it took us awhile to find it out, is that the [outsourcer's representatives] didn't have e-mail skills. Many of them didn't even have computers."

With disharmony on so many subjects, OC's Web project might have seemed headed toward gridlock, or at least a missed delivery date or bloated budget. But in just four months, the team peacefully resolved its differences and launched a colorful (including healthy doses of OC's trademark pink), easily navigable site full of practical how-to information on home improvements, repair and maintenance, in addition to the company's product and financial information. The project also came in under budget.

So how did they pull it off?

The main thing that helped OC avoid delays and irreconcilable differences was sitting down at the beginning of the process and hashing out the project's purpose, scope and time frame, Landwehr says. In March 1996, the team decided the site would be up and running no later than July 1996.

"Across the company, we had to put the stake in the ground and define the scope carefully," says Smoot. "This was not an entitlement site for everyone to put up what they wanted. Because if you're too casual and don't push for closure, then the natural tendency with things this complex is they can unravel."

When a department or person wanted something the rest of the team deemed unreasonable, members simply invoked the deadline as justification for saying no for this phase of the redesign. For instance, Fahlgren's idea to add video clips of OC's TV commercials just didn't make sense for the July deadline. "We still keep a master list of all these great ideas," says Landwehr. "But we keep them in a release fashion, much as Bill Gates would at Microsoft. If we couldn't do something for the first release, we'd use it in the next release."

In addition to establishing and adhering to a schedule, the team identified an ultimate place for the buck to stop. As Web initiative leader, Landwehr had final say in prioritizing tasks, accepting or denying requests and deciding which ideas to pursue. That approach worked because, unlike many of his webmaster counterparts, Landwehr had been granted authority by the CEO, and everybody recognized it. He also got all the funding upfront, preventing the departmental budgeting conflicts so common to cross-functional teams. In addition, the fact that no team had to pay anything out of its own budget made it easier for Landwehr to turn down some of their requests.

Hiring Proxicom to help with development was also a wise move, says Landwehr. The outsourcer's expertise enabled it to predict and avoid the problems that often arise in developing a cross-functional Web site. For example, Proxicom immediately recognized that Fahlgren's proposed content design for the site would never work because it was based on a vertical piece of 8.5-by-11-inch paper, when in fact the Web's orientation is horizontal.

While Landwehr lacked direct Web experience, his business and engineering background proved to be an asset. The people skills and project management experience he gained from overseeing the design of heating and ventilation systems for OC's manufacturing facilities turned out to be vital to the success of the project. Throughout the process, Landwehr ran a tight ship, keeping everyone focused on deadlines with weekly status meetings.

He also tried, whenever possible, to respond to requests by taking at least some aspect of the suggested ideas and showcasing them on the Web to demonstrate why they would—or wouldn't—work. For example, Smoot conceded his datasheet point when he saw how unappealing they looked posted on the Web in their entirety. Durski, meanwhile, gave in when he saw how long it took to download the complex designs he had favored. Once Brooks saw how easy it was to link to the composites pages from the home page, she cheerfully agreed that it would be best to keep everything

under the Owens Corning banner. Even the roofing department made peace with those discolored tiles when it realized how much additional educational information it could now provide to customers.

The group made its decision about the site's target audience on the basis of practicality. "We already had a lot of things for the consumer, so we didn't have to create anything new," says Strauss. "For the professional audience, [we knew] we'd need more than just information and interactivity. We didn't have [the resources to create those yet], so we went for the low-hanging fruit to start with." By repurposing existing content and not getting carried away with new features, the team avoided making unwelcome demands on employees not involved in the Web effort.

Another strategy Landwehr employed to avoid potentially crippling clashes was to schedule team-building and socializing time right off the bat. Because OC's old headquarters wasn't equipped with many collaboration spaces—much less computers with Internet access—scheduling time and finding a space with the right equipment was no small task. Until they moved into their new headquarters, they just made do. Even McGuinness was required to fly in from Virginia to participate in those early social functions. "It's a fundamental law of human nature that if you can't relate to somebody on the other end of an e-mail, you're not going to trust them," says Landwehr.

When team members encountered seemingly insurmountable problems, they would isolate themselves until they reached a compromise. For example, Baker and Durski couldn't agree on how many questions to ask site visitors, so Landwehr "locked them in a room and made them work it out," he says. Including a registration process in the Panther Place chat room eventually emerged as the compromise. When two sides just couldn't agree—such as Fahlgren and Proxicom's conflicting claims to leadership—Landwehr stepped in and made the final decision. In that case, he determined that Proxicom would lead Web development, but Fahlgren would have final creative say.

Color Guard: Sue Burkett worried that the Web site couldn't replicate the actual colors of OC's roofing tiles.

Landwehr also settled the service issue: He convinced AT&T Solutions Customer Care that equipping itself to answer clients' e-mail queries was a strong strategic move. Landwehr worked with the company's IS department to set up a bridge between the two organizations and provided six of the outsourcer's reps with Internet training as well as training in OC's products and organizational structure. He made several trips to Jacksonville to ensure everything was in order, and Previte continues to visit there nearly every week. To quell worries about customers receiving inaccurate advice via e-mail, the team instituted a process in which call-center reps would forward any out-of-the-ordinary questions to OC employees, who would make sure they got answered correctly. Once the escalation issue was settled, AT&T Solutions Customer Care "enthusiastically rose to the challenge," Landwehr recalls.

There are many chapters yet to be written in the life of OC's Web site as the company fine-tunes its creation, making it more interactive and better balanced between the consumer and professional markets. As the Web team's work becomes increasingly sophisticated, word may spread and the site may take on the reputation for excellence coveted by so many corporate denizens of cyberspace. Who knows, maybe the next time you're in Toledo, your cab driver will tell you about it. WM

Senior Writer Jennifer Bresnahan can be reached via e-mail at jbresnahan@cio.com.

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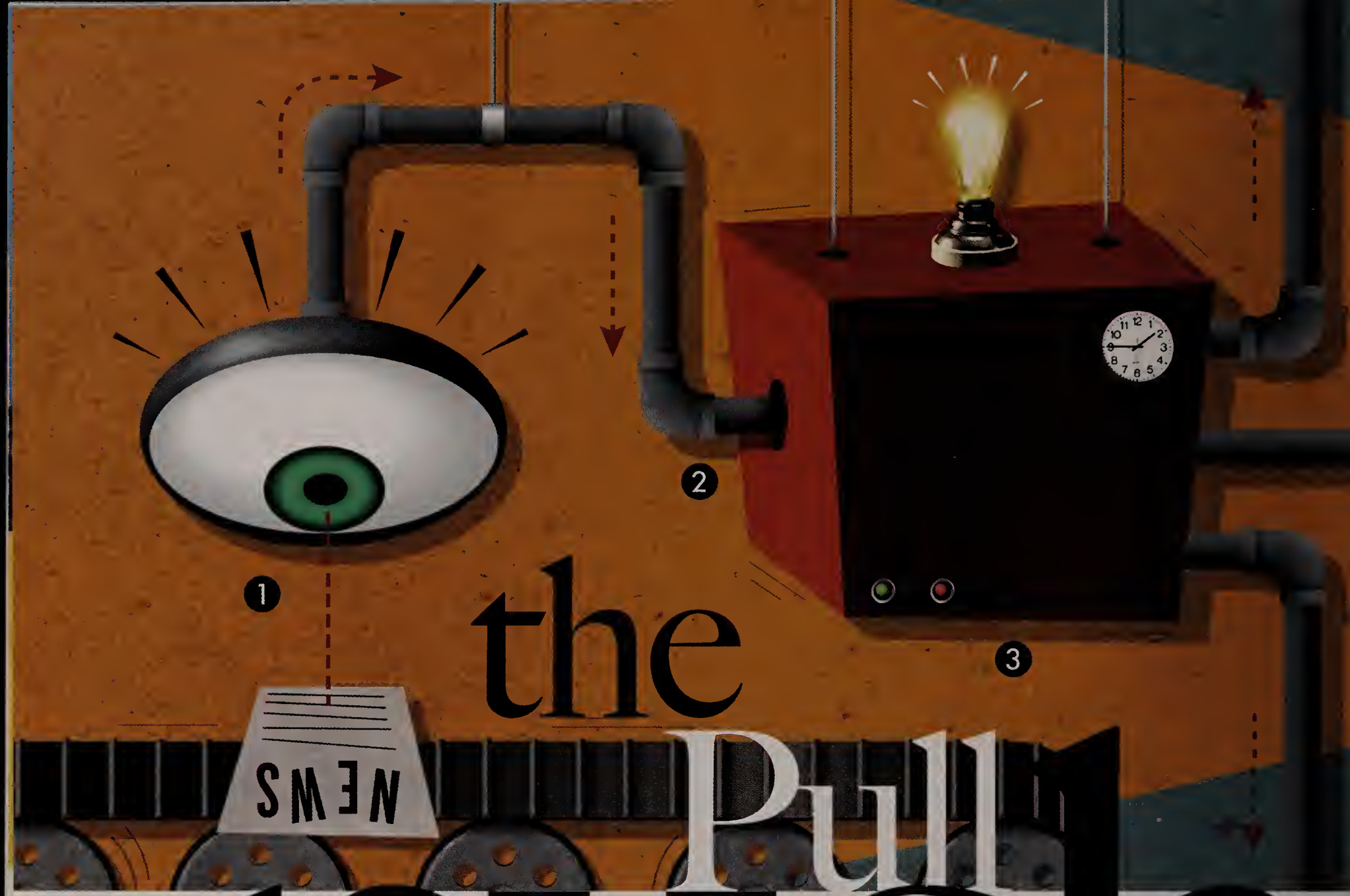


the Pull of push

The Web's latest killer app will track inventory, deliver corporate newsletters and distribute software. And you won't even need to ask.

ILLUSTRATIONS BY JOHN UELAND

BY MIRYAM WILLIAMSON

RECENTLY, ALMOST EVERYONE associated with the Internet has been talking about push technology, an innovation that has the potential to be truly rewarding. Or to be deeply annoying. Imagine this: You're tacking the finishing touches on the quarterly report, a task that demands some major and undisturbed concentration. Just as you come up with the perfect sentence, a parade of bright yellow text marches from right to left across your monitor. It advises you that the stock of your company's nearest competitor is down 1¼ points.

Sure, it's part of your job to be up on such things, but because that alert erased the perfect sentence from your brain, the advisory did more harm than good. And what if the bulletin had informed you, because of your interest in Microsoft, that Sludge Compactors Inc. had just launched a strategy designed to make it "the Microsoft of solid waste management"? The interruption

would be enough to make you think about killing your computer.

That hypothetical situation exhibits push technology at its worst: distracting, intrusive and, well, pushy. But push also has the potential to be a decision maker's best friend, as it was for a particular credit analyst at a certain well-known computer manufacturer. Not long ago, that person was about to approve the shipment of half a million dollars' worth of inventory when he was pushed an article suggesting that the customer in question was about to file for bankruptcy. Based on the warning, the analyst denied the credit request. Several weeks later, the customer went out of business.

"That kind of information really pays off," says Brad Singer, the story's source and director of market development at Desktop Data Inc., whose real-time news and information service saved the credit analyst's bacon.

Patrick Flynn, vice president of systems development at Fruit of the Loom Inc., had a similarly fortuitous experience. While he was setting up a PointCast system to serve about 650 users, he came upon some analysts' prognostications about the plans of Wal-Mart Stores Inc. and Kmart Corp.

"I thought it was interesting," says Flynn. "So I e-mailed it to the president, Richard Lappin. His assistant called me and said, 'This is great stuff. Dick's on his way to visit with Kmart. How did you get this information?'"

Flynn explained about PointCast, which gets its information from newsfeeds from several daily papers, and set it up on the assistant's computer.

"[Lappin] now has what amounts to a clipping service in near real-time," says Flynn. "There's real value in knowing where your customers are going and how they are doing."

There is, of course, no shortage of anecdotes that illustrate the value of up-to-the-minute business information, the kind of thing that has so far been the main course on the menu of push technology. But business news, observers say, is just the appetizer. Eric Greenberg, founder and chairman of the Internet consultancy Silicon Valley Internet Partners (SVIP), thinks the real payoff will come when companies figure out how to use push for huge enterprise applications. And ultimately, says Greenberg, business will realize that push's true killer app is its ability to distribute software within corporations and to customers.

"Companies spend millions on software distribution," says Greenberg. "It's one of the greatest costs of a client/server system. Push will allow you to send changes to every desktop with a script that installs and implements the software automatically."

Another emerging business model sure to spark corporate interest is one that monitors the enterprise data warehouse and notifies the appropriate people when a significant change occurs.

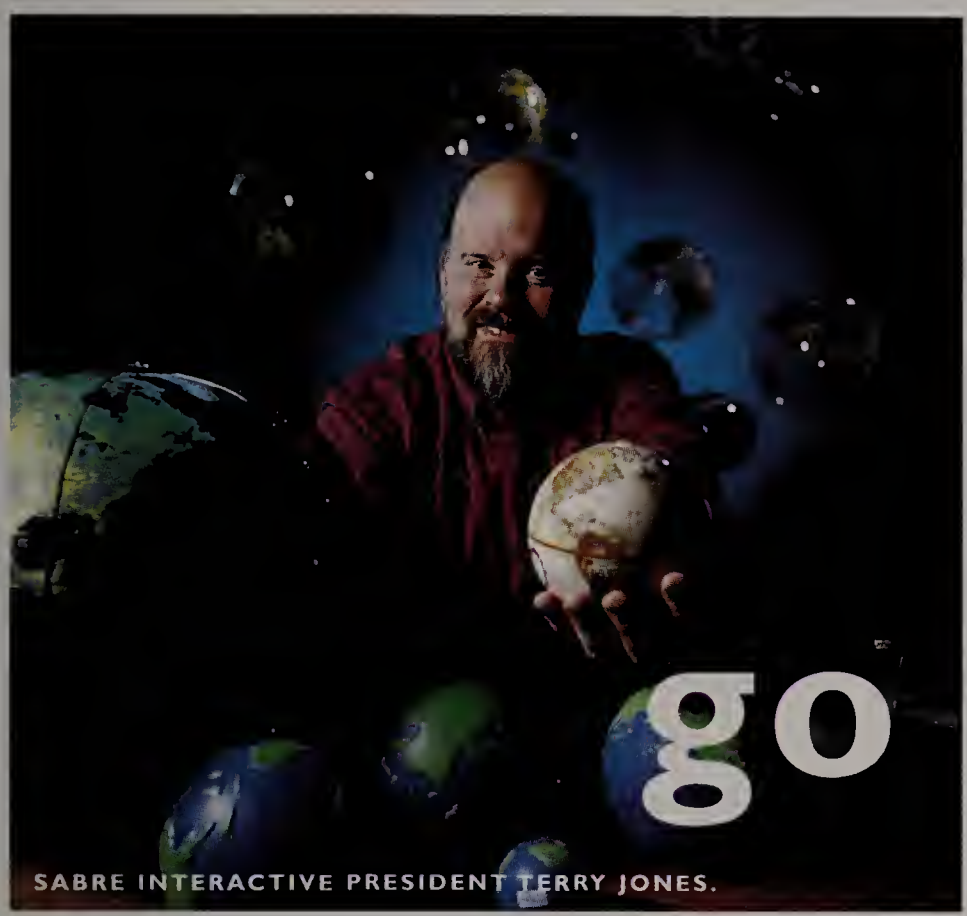
"Most databases today have triggers," says Mark Bowles, chief technology officer of Tibco Inc., which makes middleware for push systems. "But triggers can only do things to the database. You'd like to be able to get that message outside the database and onto people's screens."

WHEN BANK CUSTOMERS VISIT SALEM FIVE'S VIRTUAL BANK, THEY RECEIVE MARKET QUOTES AND NEWS REPORTS RELATED TO THEIR HOLDINGS.

Push technology can do that. It can, for example, notify a purchasing agent when an item has reached a specified level in inventory and must be reordered, a great improvement over the current procedure, which requires the agent to make repeated queries to the database to check on the inventory status.

Another purchasing-related push application may eventually do away with paper-based vendor catalogs and proprietary catalogs now on the Web, predicts David Marshak, vice president and senior consultant at the Patricia Seybold Group. Marshak also sees the integration of push and workflow tools so that a request for quotations is pushed to multiple vendors when a specific level of inventory is reached. The response looks like push, he says, because the purchasing agent doesn't have to ask for it.

Along the same vein, the data warehousing company D2K Inc. recently launched a product that can deliver legacy and data warehouse information to the desktop as a Java chart or as an Excel spreadsheet. End users schedule when they want such information sent to them. They can specify daily, weekly or monthly intervals or ask to be notified when specific events occur. And now the big database companies such as Oracle Corp. and Informix Software Inc. are forming alliances with push vendors,



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presumably for a similar purpose.

That extremely useful ability to connect to legacy data will be one of the key factors in the success of push vendors, says Ira Machefsky, a Giga Information Group vice president and senior analyst who specializes in Internet technologies. "The Web, with all its information, contains just a fraction of the information in an enterprise," he says. "It's not surprising that this application is coming from a data warehousing company."

Supply chain management is another nice fit for the future of push technology, says Tibco's Bowles. That function could be put to work at automobile companies, for example, that outsource the manufacturing of many components and whose subcontracts often go four or five levels deep. When the automaker has a strike or plant failure and wants to delay receipt of a load of parts, it wants to get that information as quickly as possible to the supplier, who must in turn consider the implications for its own inventory and notify one or more subcontractors to hold off on shipping parts.

"I can imagine a software package that thinks it through and pushes information down to the suppliers based on present inventory," says Bowles. "Speed in reacting to customers' demands make the difference between profitability and nonprofitability."

THE FUTURE OF PUSH MAY BE EVERY BIT AS glorious as Bowles and Greenberg predict, but some companies aren't waiting for the future to exploit the new technology. Ascend Communications Inc., a remote networking provider, uses push to send employees a corporate newsletter that was, until recently, printed every four weeks and mailed. And Les Sparrey, director of Ascend's VAR channel marketing, uses IntraExpress from Diffusion Inc. to push new product updates, price lists and other news to 1,300 far-flung value-added resellers. VARs receive notice by e-mail when the information is updated and dial in to the IntraExpress server to download it. Putting another arrow into his sales team's quiver, Sparrey added competitive information about the company's rivals, including its chief competitor, Cisco Systems Inc.

"They can use the information to help in the sales process," says Sparrey. When a customer asks for competitive analysis, the VAR accesses the Internet, logs onto the server and enters the customer's fax number. While the conversation between sales rep and customer continues, the analysis arrives by fax. "It creates a good impression," says Sparrey. "It shows that we're responsive and using the latest technology."

What is the true value of current business information? That depends, of course, on how one uses it, but in an arena as competitive as retail banking, some experts think it could be a powerful marketing tool. Michael Fitzgerald, senior vice president of marketing at the Salem Five Cents Savings Bank, whose virtual bank attracts about 15,000 visitors each week, is spearheading a push system that delivers personalized portfolio information to those virtual visitors. No information is pushed directly to the customers, but when they visit the virtual bank, they receive market quotes and news reports related to their holdings, pushed down from Vertigo Development Group Inc.'s One on One Banking server.

"It's a way to solidify the relationship that we've already acquired through our virtual branch by giving our customers another reason to stop by our Web site every day," says Fitzgerald. "I also expect it to get us many more virtual banking customers."

Salem's personalized portfolio presentation is similar to those offered by many financial services' Web sites and also by the PointCast Network, the most popular consumer-oriented push delivery system for news. PointCast's main innovation was to take advantage of client/server architecture and TCP/IP. The automatic delivery to subscribers of sharply targeted news excerpts dates back to the late 1980s inception of two Burlington, Mass., neighbors and competitors, Individual Inc. and Desktop Data. Back then, both began by sending information to customers by fax rather than electronically to

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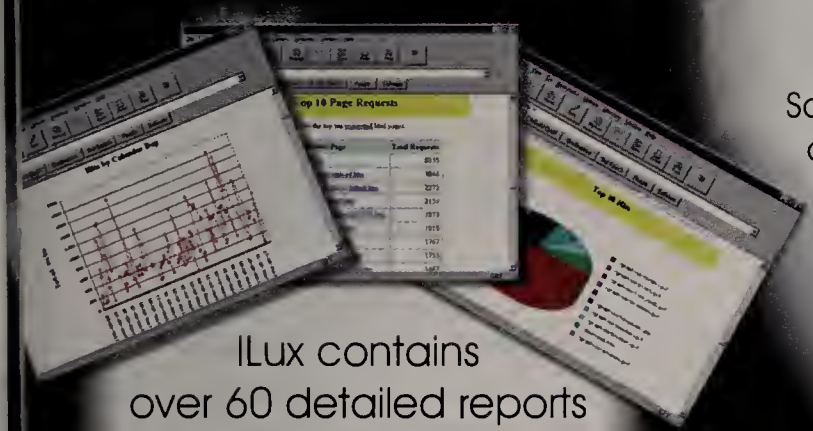

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the desktop.

Like many new and well-hyped technologies, push is devoid of standards and lumbered with a vocabulary that seems deliberately created to confuse the masses. Even the name "push" is misleading. The content that arrives on a user's desktop via PointCast and other push services isn't pushed any more than the content one sees when visiting a Web site is. Push software simply programs a user's computer to contact various Web sites periodically and download certain information.

And among the several players that are marketing push systems, the name game gets even more confusing. In the effort to differentiate themselves in a jumbled marketplace, vendors seem to invent their own terminology, much of it reminiscent of the early days of cable television. There is talk of broadcasting and "narrowcasting," which means sending information, mercifully, only to those who have signaled their interest in receiving it. PointCast and BackWeb Technologies Inc., among others, speak of "channels," through which flows information that is lumped together based on content categories with which most people are comfortable: sports, weather, news and the like. In the language of Marimba Inc., whose specialty is shipping Java-based software applications, the network server is a "transmitter," intermediary servers are called "repeaters" and the client is a "tuner."

The television analogy doesn't stop there. The services that claim the largest subscriber lists are free—no surprise there—because they hope to earn their keep by carrying advertising. Webcasting answers companies' main objection to buying advertising on the Web: that it is nearly impossible to be sure who is actually seeing the ads. Finally, computer vendors that advertise on PointCast's technology-related channels can be sure that the people who see their ads will at least understand the jargon.

Advertiser-supported webcasting of information that is aggregated from a variety of sources à la PointCast and BackWeb is but one of several business models emerging in the industry. Some push vendors offer corporations the ability to establish their own channels to carry company-specific information to employees—a cheap and easy form of corporate communication that can carry everything from the company's 401(k) information to the cafeteria menu for the day. Another approach, taken by Intermind Corp., is to monitor user-specified Web sites and deliver changed pages to the desktop. Companies such as Astound Inc. and Wayfarer Communications Inc. sell tools to enable corporations to build their own intranet webcasting systems and to push information to the intranets of their customers and suppliers.

SOME OBSERVERS SEE THE ADVENT OF CORPORATE push systems as analogous to the arrival of PCs in the 1980s: coming in through the back door without IS approval. But with push, the infiltration is even less conspicuous. Downloading products such as PointCast, BackWeb and Marimba requires no budget authorization. That doesn't mean, however, that it can be done without cost. SVIP's Greenberg warns that when downloaded products fail to work smoothly with installed software configurations, repair bills will be substantial.

Another issue that management should consider is control, or the lack of it. With push, the people responsible for the network infrastructure surrender control at both ends of the pipe. Push systems have agents that automatically download webcast material, and the network managers, says Giga's Machefsky, "have no way to figure out how many resources they need, how to allocate those resources or justify upgrading them. You don't even know if anything useful is being done."

Machefsky advocates using network monitoring tools to measure usage. "If you're not controlling what the publishers do and you're not controlling what the users do, the only thing you can do is measure," he says. "And once you've measured, a policy and control mechanism become important."

Patricia Seybold Group's Marshak says one company, which he declines to name, banned PointCast "when about 40 percent of network resources were being eaten up every time there was a new version of PointCast because everyone started downloading it at the same time." (To counteract that, PointCast offers I-Server, a network server that does one download and replicates it on users' desktops, reducing Internet traffic.)

But the question of productivity is more important than bandwidth issues, says Marshak: "Will push technologies resemble Solitaire or Minesweeper in management's view? Are they another form of entertainment,

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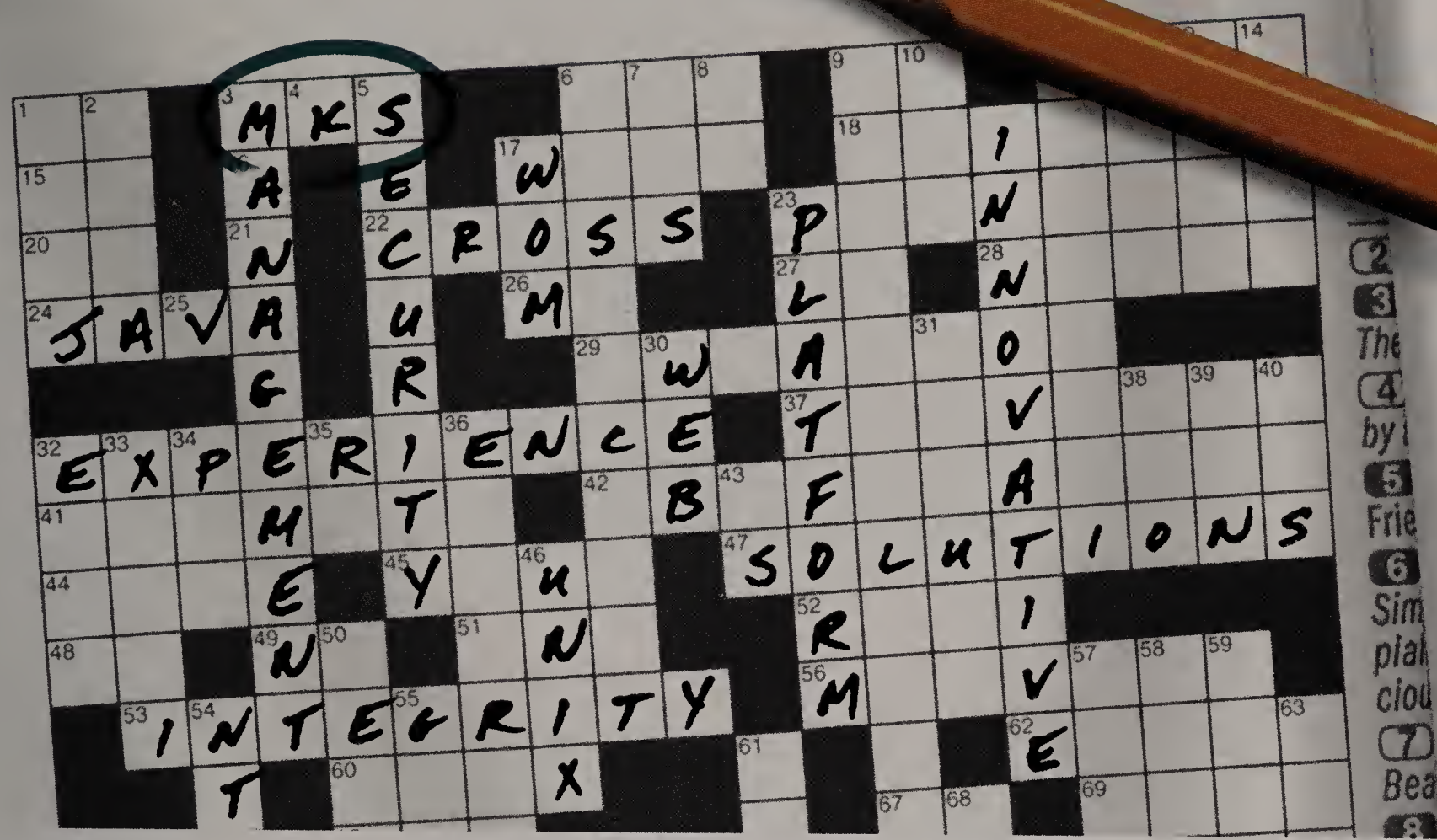

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keeping people from doing their jobs?"

At Fruit of the Loom, Flynn isn't worried. "If people spend too much time [looking at PointCast], they are already wasting time. It's not this that makes them waste time," he says. "Either they don't have enough work or there's some other management issue to be dealt with."

Another—and more political—bugaboo is not simply what to push but what to push to whom. "In some corporations, access to information is considered a source of power," says Neil F. Budde, editor of the Wall Street Journal Interactive Edition. "Push is flattening that somewhat so that more people are made aware of what's going on in their industry and what their competitors are up to, but there are some people who may be fearful of that."

At Mail Boxes Etc., a business service franchiser, friction surfaced recently when Ray Wahoff, executive director of IS, deployed a RemoteWare system from XcelleNet Inc. to feed information to more than 3,000 franchise locations. Mail Boxes has two types of franchisees: owners of individual stores, who are called "center owners," and "area franchisees," who manage geographic territories. Area franchisees may run stores, but they also are responsible for supporting the center owners. Wahoff initially intended to send all corporate information, such as e-mail contact lists, corporate newsletters and various publications, to every store regardless of the owner's designation. The area franchisees objected to having center owners receive area information that they didn't think the center owners needed. To resolve the situation, Wahoff called on his advisory groups. In the end, the company configured its new push system in a way that bars center owners from receiving information that is specific to area franchisees.

"IN SOME CORPORATIONS, ACCESS TO INFORMATION IS CONSIDERED A SOURCE OF POWER.... SOME PEOPLE MAY BE FEARFUL OF THAT."

—Neil Budde

Finally, push is hit with the same broadside as other Internet technologies—that it just compounds the epidemic of information overload. "If you have hundreds of thousands of pages of content out there and no way of classifying them, how do you know what's relevant and what isn't?" asks SVIP's Greenberg. "What's out there and what isn't? How do you find what you need? We're going to see just as much of a document management nightmare as we have today, only the new documents are electronic, not paper."

The answer to that, says Tibco's Bowles, is a registration system that enables users to specify what content they want to receive—something, for example, that would enable receipt of information on Microsoft's announcements and actions without transmitting metaphorical references such as "the Microsoft of waste management" or the news that a product will run under Microsoft Windows.

For every problem, it seems, there is a solution, and when it comes to push technology, many of the problems and solutions are largely hypothetical. So is the promise. Greenberg's predicted huge enterprise applications will have to prove themselves in the real world of maintenance costs, security flaws and unforeseen obstacles. But for a growing number of corporations, the potential payoff must be worth the risk. They are going for it.

"If the CEO is receiving exactly what he or she needs without missing things," says Mail Boxes Etc.'s Wahoff. "It's a tremendous achievement." WM

Miryam Williamson is a journalist in Warwick, Mass. She can be reached at mwilliamson@ reporters.net.

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7 Seers

Distinguished observers of business on the Web talk about where it's going and how to get there ahead of the crowd

BY SCOTT KIRSNER

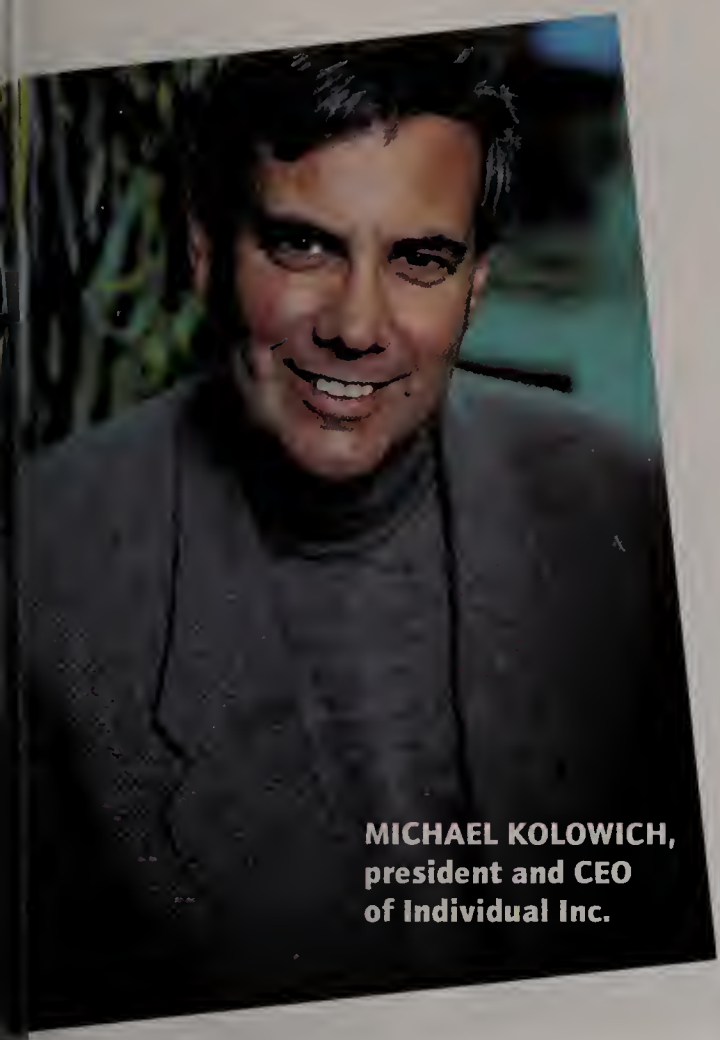
including ① Michael Kolowich ② Michael L. Dertouzos ③ Patricia Seybold ④ Steven Telleen ⑤ Gordon Bell ⑥ Watts Wacker ⑦ Bob Metcalfe

"If you were responsible for developing the Web resource within an organization, what changes would you be planning for over the next five to 10 years?"

That is the question that *WebMaster* magazine put to seven highly regarded observers of business on the Web. While our experts had no problem answering that question, they found it nearly impossible to do so within the 500-word limit we imposed.

These seers see many things, from the move to tiered pricing and the need for larger IS budgets to a blurring of the line between internal and external communication, and the growth of Web-based conversations about a company's very soul. So read on, and enjoy the forecasts of the best and the brightest of Internet sages.

MICHAEL KOLOWICH is the president and CEO of Individual Inc. (*www.individual.com*), an information provider that delivers customized industry news to corporate intranets and runs the consumer-oriented NewsPage. Kolowich was the founder and president of AT&T's former New Media Services division; founder and president of Ziff-Davis Interactive, now Ziff-Davis Inc.'s ZDNet; and corporate vice president for marketing at Lotus Development Corp. He is also an Emmy Award-winning television reporter and producer who worked for several New England network affiliates in the 1970s.



MICHAEL KOLOWICH, president and CEO of Individual Inc.

ONE OF THE MOST important things to look at is how multiple classes of service are likely to develop and, in fact, must develop on the Internet to make it a truly useful, reliable resource.

The traffic jams and the degradation in performance and reliability at certain hours of the day are well documented. In order for the Internet and the World Wide Web to be truly useful tools, service providers, content companies and customers need to work together on ways that take the wonderful, universal connectivity and standards of the Internet and apply to them the kind of high reliability, availability and performance that business customers need, demand and should be willing to pay for.

Right now, many companies are covering that by saying, "Gee, a lot of our applications need to be intranet applications and need to be on our site because that's the only way I can guarantee end-to-end reliability and availability." But I believe that we have to develop the notion of "virtual intranets" that make it possible to access information on remote servers so that it really feels like the server is on your company's premises.

There are a number of different approaches to that problem. One is for Internet service providers to increasingly provide parallel private networks that still use Internet standards but that route that traffic over private, secure or lower-demand routes. Another is [to create] other ways to differentiate high-priority and first-class traffic. I mean, we're running the Internet like it's a discount airline—all the passengers get the same kind of seat, have to carry their own bags and travel on standby. That's simply not acceptable to the general business population.

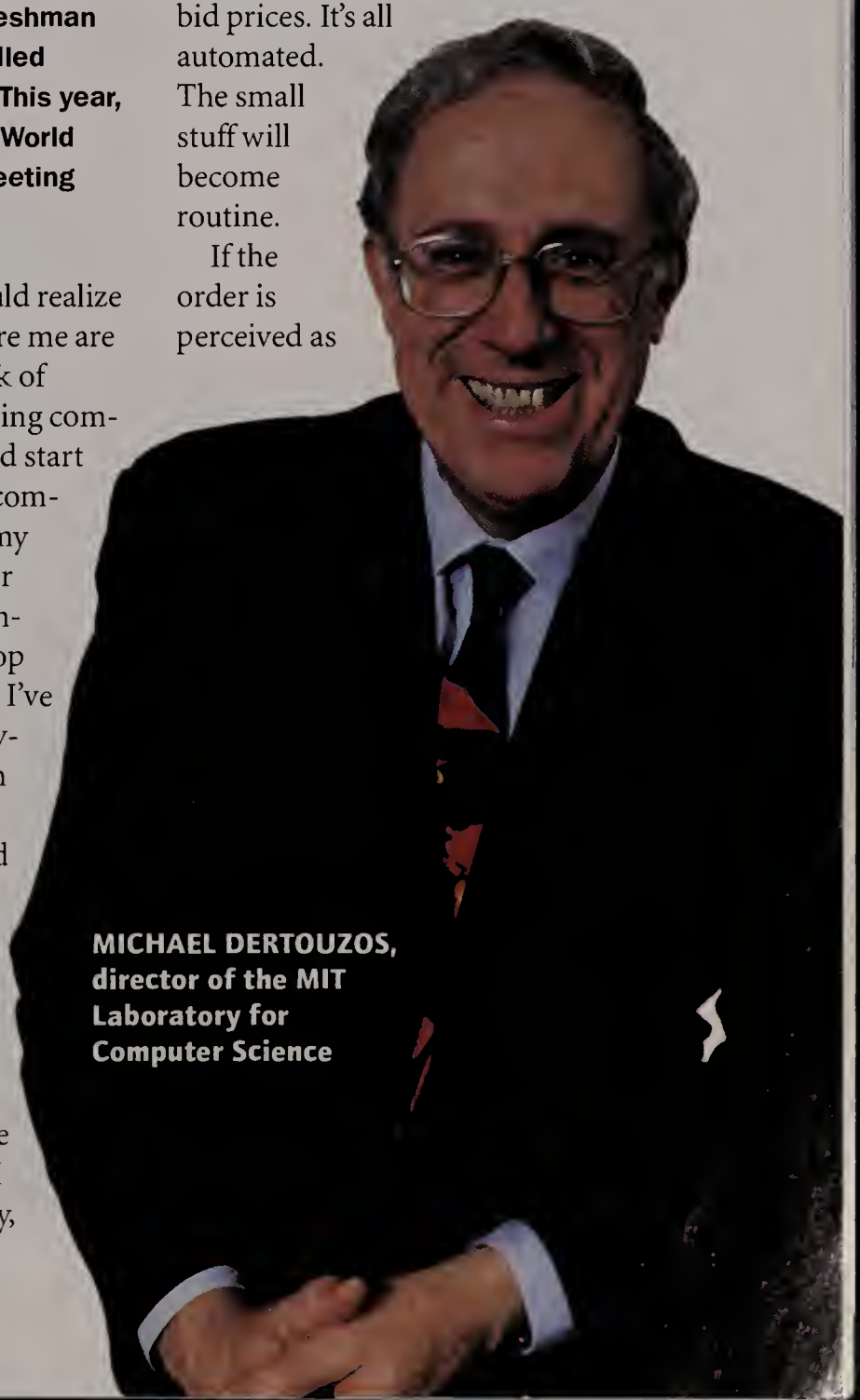
MICHAEL L. DERTOUZOS is the director of the MIT Laboratory for Computer Science (*www.lcs.mit.edu*) and author of the book *What Will Be: How the New World of Information Will Change Our Lives* (HarperCollins Publishers, 1997). Dertouzos' duties at the lab include teaching a freshman seminar on inventiveness called "Hanging with the Hackers." This year, he served as co-chair of the World Economic Forum's annual meeting in Davos, Switzerland.

THE FIRST THING that I would realize is that the biggest limits before me are not technical but rather a lack of human agreements [concerning commercial transactions]. I would start immediately to get together common interest groups within my organization and across other organizations—even my competitors—and I would develop the simplest E-forms, a word I've coined, that would save everyone time and money through automation.

Let me put a little flesh and blood behind this. If we had a wholesale produce company buying and selling oranges and things, I would get together with all the buyers and sellers of produce and say, "Let's devise a simple E-form with a field for what I want to buy, a field for quality, a field for size." We'd agree on about 10 things. It's very simple. You don't need agents, you don't need robotics and you don't need virtual reality bodysuits for this.

Once you've agreed on a few simple things, it becomes incredible how much time and money you can save. Let's say you want to buy two metric tons of oranges, quality triple-A, size 2.5 inches or greater, minimum bid price of so much per ton. You push it onto your internal Net to see if anybody there agrees or disagrees, and then you push it onto the outside Net. It gets translated into Italian, Spanish, gets pushed down to Italy, Spain, California, south of the border. Computers there, at other wholesalers who've agreed with you, respond instantly without consulting their owners if the order is small and give you their fixed bid prices. It's all automated. The small stuff will become routine.

If the order is perceived as



MICHAEL DERTOUZOS, director of the MIT Laboratory for Computer Science

PHOTO ABOVE BY JOHN SOARES; PHOTO BELOW BY DONNA COVENEY / MIT

PATRICIA SEYBOLD, president and CEO of the Patricia Seybold Group

big in Italy, it pops up in Italian to the person there. And he says, "My god, that's a big order for my firm. I'd better underbid." And he goes live and underbids.

Every company could do this with outside groups. But there's an equal or greater amount of money to be saved and efficiency to be achieved within the company. I would ask what information flows, how it could flow, how we could save money. You'd probably find that you wanted certain information posted once a week that shows for every unit what the orders have been, what the inventory levels have been and what the revenues have been. People could access that information any time they needed to. They could establish standing procedures that would use this data, read what everyone else was doing and plan their purchasing or shipping.

Individual executives and managers would be able to tune all their procedures and automate them so that they'd be getting all the information they need to run the company.

PATRICIA SEYBOLD is the president and CEO of the Patricia Seybold Group (*www.psgroup.com*), a technology consulting firm that she founded in 1978. Seybold was instrumental in the launch of the Open Software Foundation and the Object Management Group. She is the author of *Customers.com: Making It Easy for Customers to Do Business with You* (Patricia Seybold Group, 1997).

THE MOST OBVIOUS things that you should be considering are bandwidth, security, throughput and capacity—making sure that you're going to be able to handle the hundreds of thousands of people outside and inside your organization who want to use your Web resources.

The other piece I would focus on is making sure that you have the tools and technologies to be able to do a lot of profiling—dynamically generating stuff in response to employees' and customers' profiles and preferences. The important investment there is that your company is going to need to maintain that customer profile information itself, and [the volume of that information] may grow to be very big. Keeping track of every click that everybody makes is a big job, as is trying to make sense of [that activity] and mine it for good information. What I'm saying is you can outsource anything—fulfillment, transaction processing, whole chunks of your value chain. But you should not outsource customer profiling and the process of storing and managing information about your customers.

It may be that customers maintain their own profiles and that they may become much more stingy about what they let you capture about them. But in developing a relationship with the customer, you're going to be gathering a whole lot more information about what that customer wants from your company, and that's not something you want to outsource. You want that information tightly integrated with all your other systems, so you should be keeping it in-house.

Another issue I see already arising that will only grow in importance is that the customer is only going to give you information in exchange for value. I'm not going to tell you about all my investments, for example, when I come to your financial services site unless you're going to do something good for me—alert me when my stock prices go up or give me some retirement advice. Savvy Web developers are figuring out that they have to learn what customers value and then give it to them in return for information about those customers.

[While] front-end design is easy, the hard work and the part that tends to cost the most money over the long haul is connecting the processes that happen when the customer interacts through your Web site with the rest of your organization: integrating large legacy systems across various depart-

PHOTO BY STELLA JOHNSON

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"You can outsource anything, but you should not outsource **CUSTOMER PROFILING** and the process of storing information about your customers." *–Patricia Seybold*

ments and fiefdoms. All of that takes time and money and work, but what I like about it is that people begin to see that it's a no-brainer once they get started. It's kind of like a tip-of-the-iceberg problem—the stuff at the front end of the Web site is the tip of the iceberg, and everything you have to do on the back end to get your systems working efficiently to use the information you gather is the rest of that big iceberg.

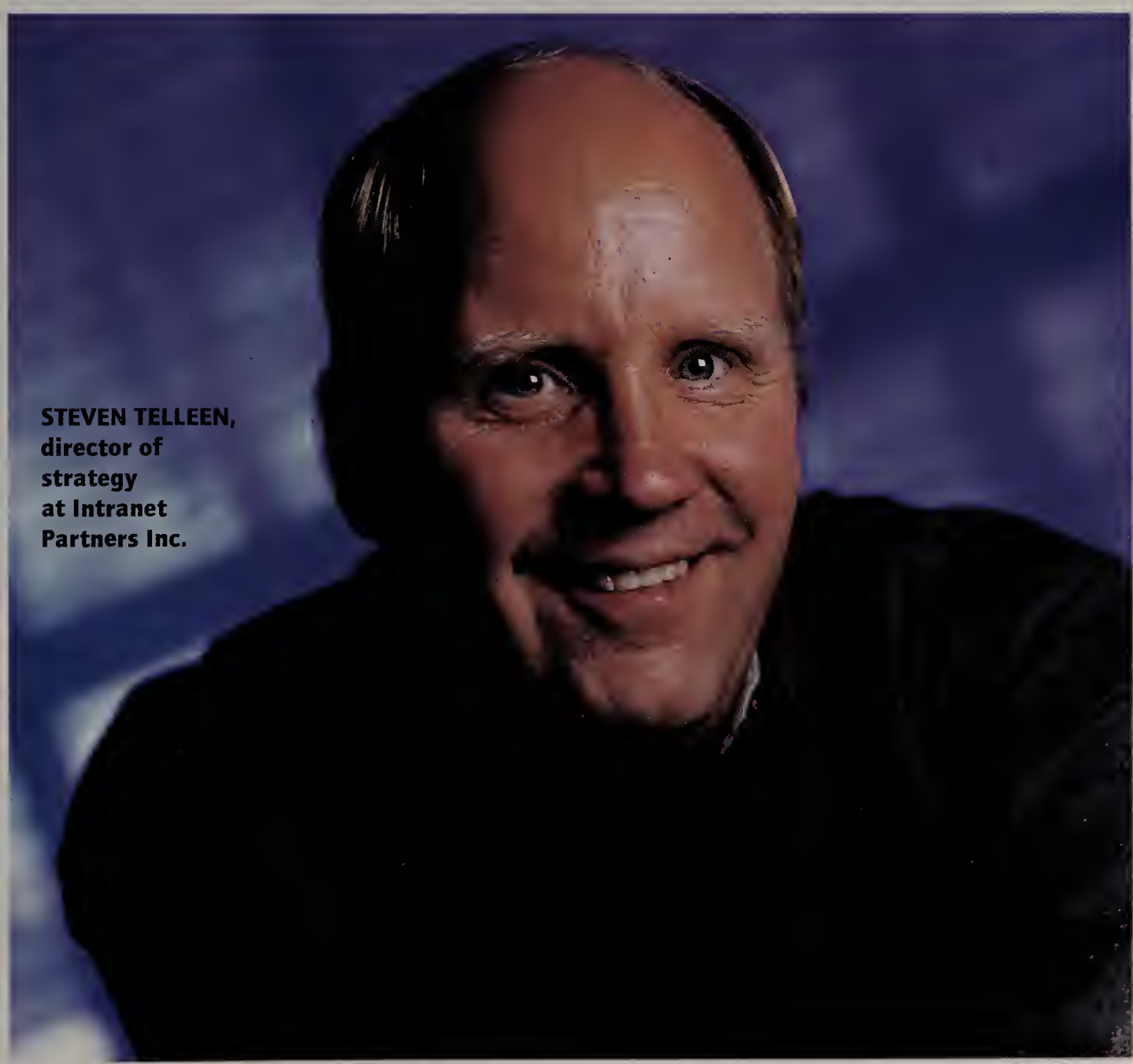
STEVEN TELLEEN is the director of strategy at Intranet Partners Inc. (*www.ip.com*), an intranet consultancy and service provider. Before helping to launch that company last year, Telleen led the group at Amdahl Corp. that built one of the first intranet prototypes. He is credited with coining the term "intranet."

ONE OF THE MOST interesting things that I see over the next five to 10 years is that nobody can even begin to predict the products that are going to come out. You can predict some general paths, but it's sort of like what Isaac Asimov said about some of the science fiction books he and others were writing in the 1950s: "The one thing that we missed was computers." Nobody ever saw what was going to happen with this. We're in one of those phases where we are limited primarily by our imaginations and our experience, and it's impossible to see what the products are going to be.

That is why a solid information architecture based on encouraging and managing diversity, as opposed to containing diversity, has become so important. In the past, many companies took the short-term, easy solution by standardizing on a single vendor's products for the basic infrastructure. They, in effect, transferred much of the responsibility for developing their information architecture to the product vendor. That is a dangerous course when truly revolutionary products and whole new approaches are emerging.

First, the information architecture is likely to become the major competitive advantage for many businesses, which means that off-the-shelf architectures are a competitive disadvantage. Second, all vendors with product families large enough to supply most of an architecture are based on proprietary protocols and APIs. Unless they are the ones to introduce the revolutionary products (and they never are), you will encounter a second level of competitive disadvantage. Hand integrating will be expensive, both initially and to maintain, and the new product will never quite fit the architecture provided by the vendor.

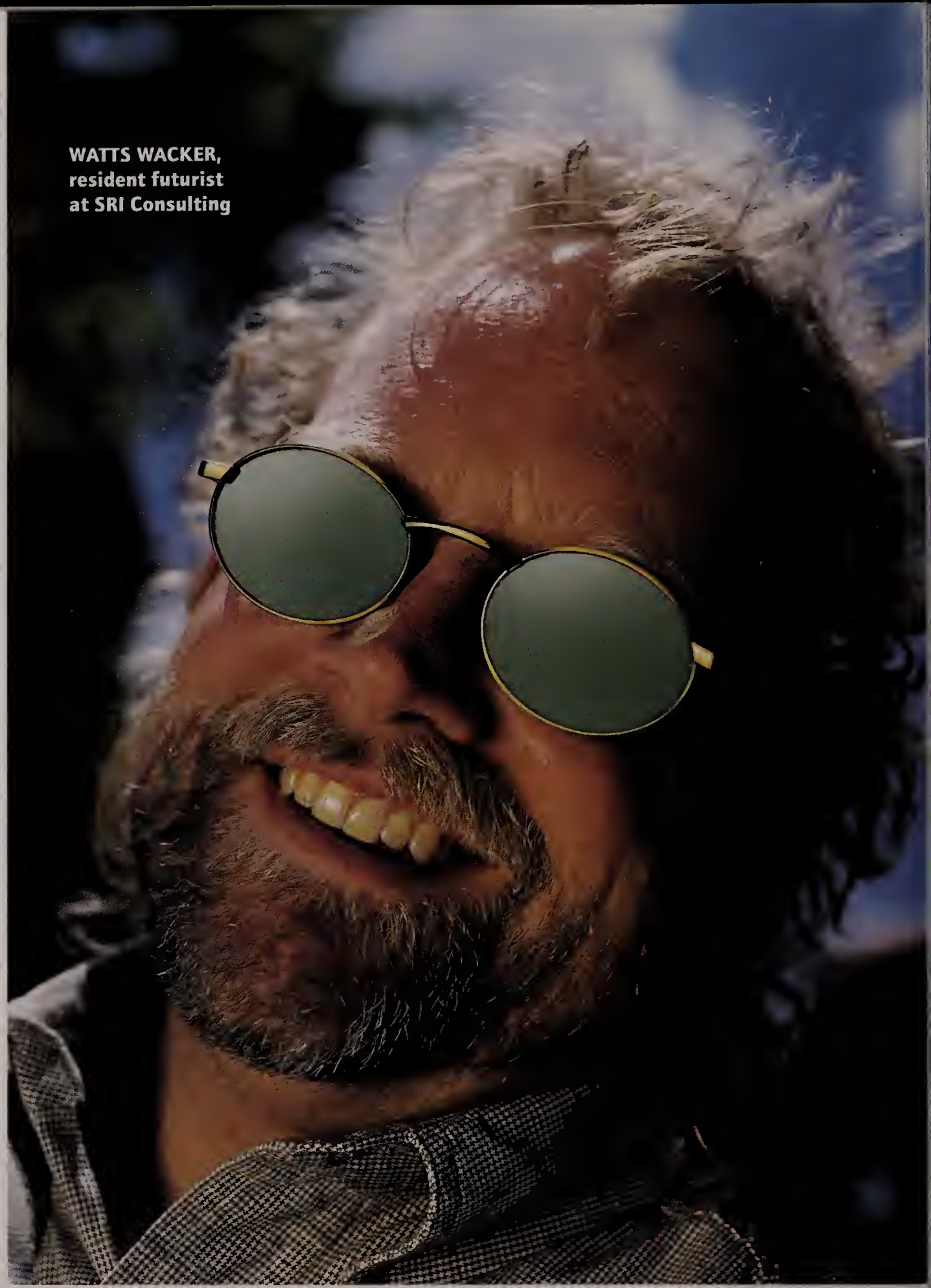
GORDON BELL is a senior researcher in Microsoft's Telepresence Research



STEVEN TELLEEN, director of strategy at Intranet Partners Inc.

PHOTO BY KENT HANSON

Group (*www.research.microsoft.com/research/BARC/telepresence*), a part of the company's Bay Area Research Center. Before joining Microsoft, Bell spent 23 years at Digital Equipment Corp., where he was responsible for the design of the VAX. Bell is the co-author, with John E. McNamara, of *High Tech Ventures: The Guide to Entrepreneurial Success* (Addison-Wesley, 1991).



WATTS WACKER, resident futurist at SRI Consulting

FOR MOST COMPANIES, I believe the issue is failing to see the implications of the Web for their businesses. That is not the problem of the webmaster but rather the plight of the corporation. However, it is the webmaster's responsibility to inform the company of opportunities. [For that reason,] I would suggest that one support all forms of radical apps that show promise in changing the very nature of the business. Experiment!

Make sure that the company is aware of the opportunities and the threats. If your company is a dyed-in-the-wool follower but holds a reasonable position in your industry (as opposed to just being there), then make them aware of the opportunity to buy a critical startup that may threaten them downstream. I fear most companies are just going to wait and see.

Head toward the vision that is occurring: Everything cyber-izable will be in cyberspace. That means all bits; bit tokens; and the state of people [such as where they are and what they are doing], and places and things. Get your company to get with the program. Get rid of those quirky client/server apps and make electronic all the paper—manuals, reports, etc.—that is pushed around.

WATTS WACKER is the eighth person to bear the title "resident futurist" at SRI Consulting, a division of SRI International (*www.sri.com*), a nonprofit research and consulting corporation founded in 1946. His latest book, *The 500-Year Delta: What Happens After*

"To have a **TRUE RELATIONSHIP,** you have to have growth, sustained involvement and reciprocity." *–Watts Wacker*

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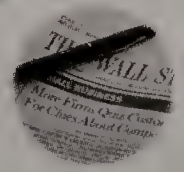
forums  *and mailing lists. Fully compliant with NNTP 2.0.*

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***What Comes Next* (HarperBusiness, 1997), written with Jim Taylor of Gateway 2000 Inc., was published in May.**

EVERYONE'S TRYING to figure out how to make money on the Web. Well, I would say the argument is that you're not going to ever make money on it—that it's not about making money. It's about providing myths.

When I talk about myth provision, what I mean is that it's getting harder and harder for companies to differentiate their products in a tangible way. I defy anyone to show me the difference between a Marriott and a Hyatt Regency hotel. In the future, the differentiation will be based more on what you believe. A Web site can be dramatically demonstrative of that. It's more than just interactivity, it's iterative. To have a true relationship, you have to have growth, sustained involvement and reciprocity. A Web site allows for growth and sustained involvement (what I call iteratives), but it's also a way to put in reciprocity, which is hard to achieve in other parts of the company. You can say, "write me a letter or call customer service," but that doesn't get you all the way there.

The Web allows you to have an iterative debate with your customers and your prospects. The heart of it is that it gets you deeper into a person. The only way to do that is to have a relationship. Growth, sustained involvement and reciprocity. You can't do all three with any other tool.

The whole idea is, "be, and everything will come to you." Be the essence of your beliefs, and the money will come to you. Make a Web site where the debate about the soul of the company is going on with employees as well as prospects. That, to me, is much more powerful than just "I'm going to put my catalog on the Net" or "I'm going to sell my goods on the Net."

The Web site should be provocative—not to provoke you to become the next crazy mailman—but to challenge your thinking about you, the company and why you do what you do.

BOB METCALFE is vice president for technology at *WebMaster*'s parent corporation, International Data Group (*www.idg.com*), as well as a columnist for the magazine

BOB METCALFE, vice president for technology at International Data Group

***InfoWorld*. In 1973, Metcalfe helped invent Ethernet technology. In 1979, he started the networking company 3Com Corp. Today, Metcalfe calls himself "a technology pundit."**

I THINK THE WEB is well exploited on intranets—that is, serving employees—but the long-term focus will be on extranets—serving customers. The big part of it is going to be external: customer automation, self-service, ordering, account maintenance.

IS people traditionally are inward-focused, and they are used to developing systems that they can force employees to use. But the Web is not like that. IS people can't rely on coercion so much in the future to get their primary users to use their systems. They're going to have to induce them because [those users are going to be] customers, and customers only do what they want, not what you tell them to do. And that's a different mind-set for IS.

We're also going to see an increase in the kind of value that customers demand from a company's information systems. They've always demanded it from companies, but now they're going to be demanding it through IS. So IS has to adopt that new mentality.

One of the implications of that is that IS budgets are going to go up substantially as a percentage of sales. And IS has to understand that and communicate that because more and more of the marketing, fulfillment and all that stuff that is done now through other channels will increasingly—not entirely, but increasingly—be captured by the Web.

IS is going to have to do a better job of justifying and explaining where that money is going and also of repositioning IS as more fundamental to what companies do. As we're going to an external model, new rules and maybe even new kinds of IS people will be required. It may be people with more of a marketing bent, more of a customer service bent—in general, people more connected to other functions within the company. What's really happening is that these other functions—marketing, sales, fulfillment, payments, collections, shipping—will be more Web-intensive.

IS is basically getting its wish: It has always wanted to be more important. Of course, all your troubles begin when you get what you want. WM

Scott Kirsner can be reached via e-mail at Kirsner@worldnet.att.net.

PHOTO BY WEBB CHAPPELL

"I want answers Frank, how fast can we move on this?"

"I see an April launch date. That means we need an Internet company that can strategize, design and host our web-site, all at the same time. Is this possible?"

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I R O N L G H T

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LETTING GO: At the University of Wisconsin-Milwaukee, Interim Director of Information and Media Technologies Carla Garnham led the charge to "free the data."

Data, New Tricks

Seventy percent of corporate data rests quietly on mainframes. The Web can give it new life. **BY GENE KOPROWSKI**

PHOTO BY JEFF LENDRUM

HISTORIANS LOVE INFORMATION from earlier times, but not when they're trying to schedule classes. Until recently, outdated class rosters and course listings were all that were available to history professors at the University of Wisconsin-Milwaukee (UWM). As a result, it wasn't uncommon for students to show up for the first day of a seminar on Europe between

24-HOUR CARE: Consultant George Hommé set up a system that lets Monitor Medical Inc. customers order medical supplies 24 hours a day.

the wars only to find that the class had been canceled due to lack of enrollment.

The department was in chaos, says Carla Garnham, the university's interim director of information and media technologies. "There was no way for [professors] to easily learn how many students had enrolled in Renaissance history and whether professor so-and-so was going to get to teach a particular course."

Initially, the university's IT department had planned to upgrade to a larger mainframe to support the school's legacy student administrative systems and to maintain its careful stewardship of the data. But that strategy wouldn't win them the productivity gains they wanted; it would just add to the size of the IT staff.

Whatever solution the department came up with, Garnham hoped to achieve two goals. She wanted to exploit the school's technology investment—an IBM MVS mainframe running IMS/DB and CICS—and she wanted to offer the university's more than 1,500 faculty members and more than 21,000 students direct access to valuable data.

The answer, says Garnham, was the World Wide Web. She and her colleagues are now in the process of migrating the university's legacy mainframe and database to a Digital Equipment Corp. Alpha Unix system and Oracle Corp. database and linking to the Web, a move that will offer wide and easy access to information and, among other things, allow students to enroll in classes by registering online.

"We recognized that the key to all this was what we whimsically called 'free the data,'" says Garnham.

Many organizations—educational and corporate—are coming up with solutions much like that of UWM. The market research firm International Data Corp. (a sister company of CIO Communications, which publishes *WebMaster*) predicts that the Web/mainframe integration marketplace will grow to $1 billion by the year 2001, and that doesn't include Web integration with existing client/server systems. Such growth is not surprising when you consider the forces driving it. For many companies, integrating the Web and legacy systems is critical to fielding robust electronic commerce applica-

PHOTO BY ROGER BALL / LIAISON INTERNATIONAL

tions, the kind of applications they must have if they hope to remain competitive. And because 70 percent of corporate data now lives on mainframes, integration with those mainframes is a must, not a maybe.

"One of the attractions of keeping legacy systems in place is that reengineering them is a relatively major step," says Rob Marks, director of product marketing at Internet tool company Simware Inc. "We like to believe that in the future, people will build applications for the middle and then start to migrate away from those kinds of systems. But I think the horizon for that is really measured in years."

A critical point—and one that systems integrators like to emphasize—is that the entirety of a legacy system doesn't have to interface with the Web. Users who want to keep their green-screen applications—mainframe-based accounting and management systems, for instance—can do that. At UWM, for example, administrative directors and staff in the bursar's offices prefer to access their 3270 transactions the old-fashioned way. And they still can.

No matter what approach a corporation takes, developing links between the Web and legacy systems is rarely simple, and complexity increases with the level of integration. There is no shrink-wrapped solution, and according to a recent survey by technology marketing consultancy Cohn Godley Norwood, 76 percent of technology professionals think existing programming languages and application development environments are not suitable for creating integrated Web/legacy systems. The technologists' chief concerns about undertaking such projects include security, data integrity and difficulties with application development.

At UWM, Garnham defined the scope of her Web-enabling initiative based on the cost of retraining staff to use the Web and on the availability of technical resources. "We have a problem recruiting and retaining competent technical staff," says Garnham. "Universities cannot offer the same money as the private sector, so we were limited in what we could achieve."

Garnham also sees the Web interface as the best alternative to an enterprisewide client/server initiative. "When you thrust your core staff into client/server, you have to make sure you will not sink your enterprise," she says. "We think client/server may have run its course and that the next trend—object tools—may be worth waiting for." That wait may take another four or five years; but in the meantime, the Web lets UWM free up some of its information for a much smaller investment.

To link UWM's legacy database to the Web, Garnham's department tapped Web Client, a Java-based middleware tool from UniKix Technologies, a division of the Fisher Technology Group. Web Client provides Internet access to CICS-based applications on legacy mainframes and servers, creating HTML pages dynamically and sending them down to the browser requesting the data. "Now we're no longer locked into the old system," Garnham says.

GE Supply, a division of General Electric Co., had visions of electronic commerce when it began developing SupplyNet, a Web-based application that gives customers access to the company mainframe and sends dynamically created HTML pages to the browser requesting the data. SupplyNet connects bulk purchasers of electrical components to the company's national order-ship-bill system, XPD2. Users can obtain real-time inventory information with customer-specific pricing; they can also enter and track orders, create quotes, review invoices and view product specifications and engineering drawings.

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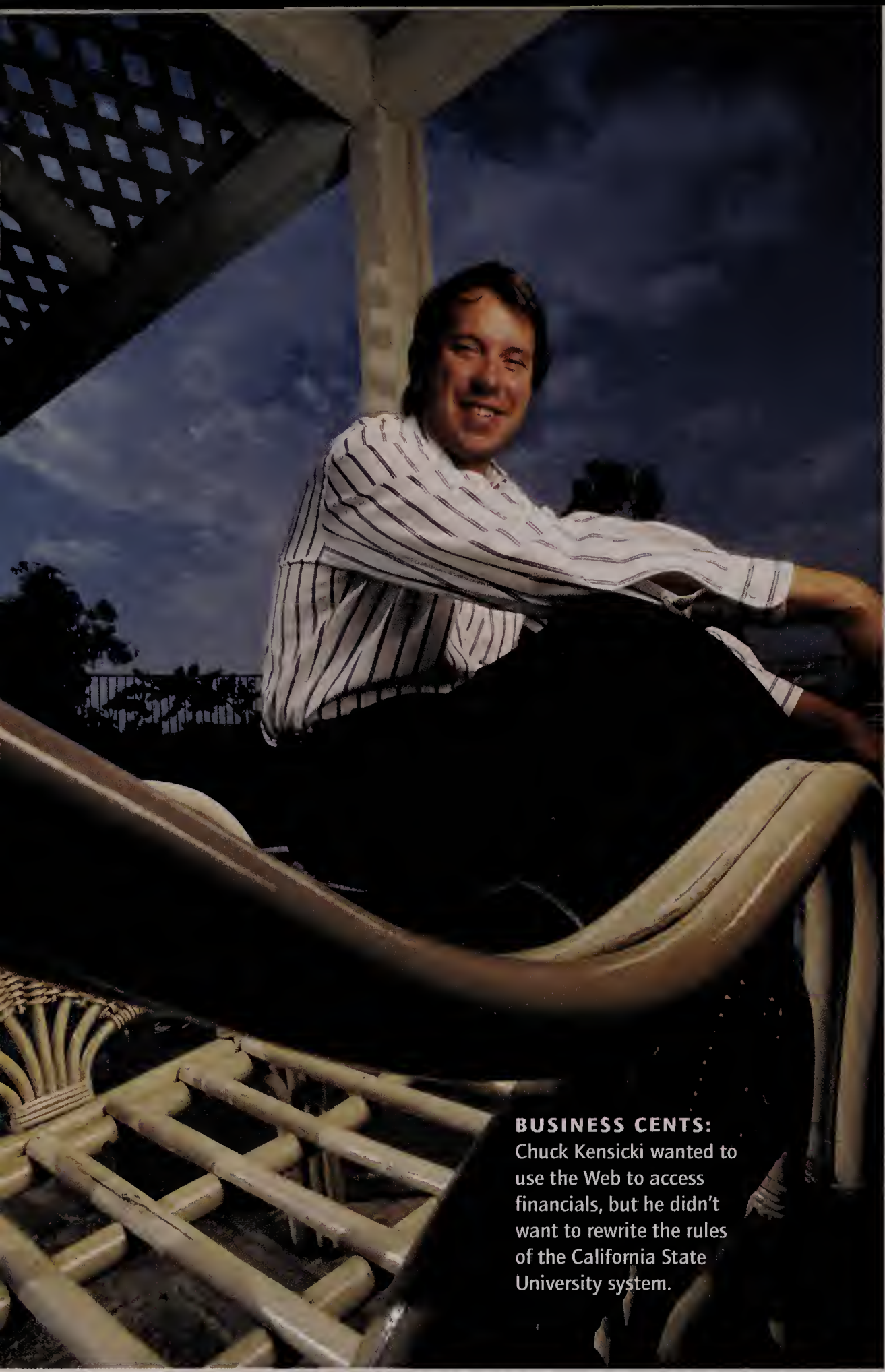
Analysts say the Web/mainframe integration marketplace will grow to $1 billion by the year 2001.



BUSINESS CENTS: Chuck Kensicki wanted to use the Web to access financials, but he didn't want to rewrite the rules of the California State University system.

The application lives on a Sun Microsystems Inc. server running the Solaris operating system and is accessed using a Netscape Communications Corp. Commerce server with the secure sockets layer (SSL) protocol for complete security. An RSA-MD5 message digest algorithm secures data over the network. Infosys Technologies Ltd.'s Entark, a client/server middleware product, gives users real-time access to the mainframe. SupplyNet is only the first step in what GE expects to be a long and rewarding walk with the Web.

"We think that the Internet will play an increasingly important role in information exchange and business transactions between our company and its external partners," says Dave Benson, CIO of GE Supply.

The new system enables GE to reduce the number of clerks taking orders in its electrical component supply divisions. Customers take over the functions of the clerks: entering and tracking orders, reviewing past orders and checking inventory. Though GE won't say what kind of staff reduction the implementation has made possible, they do say that it is a substantial savings.

For the past four months, Monitor Medical Inc., a $20-million medical speciality distributor, has been using WebSpeed, an application development tool from Progress Software Corp., to offer its customers an order entry and fulfillment system.

Before installing the Web system, orders were taken via an 800 number and were processed by clerks, requiring that the company keep its customer service operation available 24 hours a day. Now Monitor customers pull up product order forms on the Web. A hospital employee, for example, wanting to buy some new tracheotomy tubes, simply scrolls through the site, selects and clicks on the product and enters a customer order number and password. The order is processed automatically and sent to the warehouse for shipping.

"Our main competition is Baxter Medical," says George Hommé, vice president of Electronic Solutions Inc. and a senior consultant at Monitor. "The reason we exist today is because we can service customers in a way [Baxter] cannot. If somebody calls on a Sunday night, we react to that call. If we can fulfill orders in real-time [using the Web], it is an advantage for us."

Monitor has shed its mainframe and is running the system on an array of servers under AIX, IBM Corp.'s Unix tool. The company decided to move to the Web and client/server computing at about the same time. Client/server streamlined Monitor's in-house processing, easing access to data for the sales clerks on the phone. The Web interface takes that one step further, giving customers access to the data directly.

WebSpeed serves as a broker between the CGI and the HTTP demons. "We have our own programmers working with it, using an HTML editor

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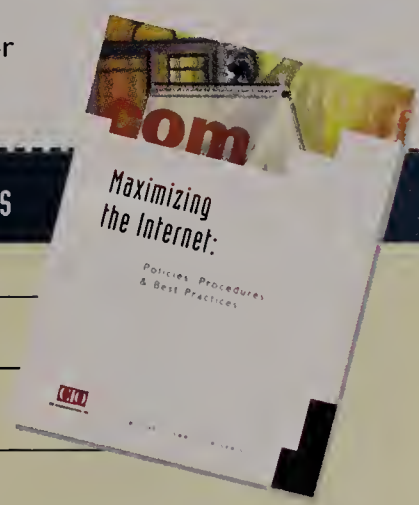

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to write Progress code and a GUI interface," says Hommé.

At Hewlett-Packard Co., moving to a Web/legacy hybrid has improved quality by making available information about how to build products, says Christopher Shockey, an information engineer at the company's Inkjet Supplies business unit in Corvallis, Ore. The unit has six Unix and Windows NT servers running Documentum Inc. document management software at various sites worldwide. Those servers, which hold such information as lists of performance specifications, standard operating procedures and global policy documents, are now all accessible via the Web.

While Shockey says the ROI of this approach is difficult to calculate, "the payoff is that we knock down the barriers to getting documents. 'If the system is so easy,' [employees say,] 'I can do it myself.'"

On the GE site, customers take over the functions of the clerks: entering and tracking orders, reviewing past orders and checking inventory.

The California State University system, with 22 campuses stretching from Humboldt in the north to San Diego in the south, is spending about $300,000 per year to integrate Web and legacy systems. Chuck Kensicki, director of business management systems, thinks the money is being well spent. The goal, he says, is to offer online student registration for classes and management of travel and expense accounts.

The mission-critical application for the business side of the university is its financial system, which uses Oracle relational databases running on IBM mainframes, R/S 6000s or Digital Equipment Alpha systems, depending upon the campus.

"Like most companies, we have a screen for financial expenditures," says Kensicki. "To get into the screen, you need two account numbers, two passwords and then once you're there, the navigation is quite complex. This is not a Microsoft interface."

Kensicki wanted to use the Web to make accessing financials easier, but he didn't want to have to rewrite his business rules. He examined numerous products and settled on Simware's Salvo, an object-based framework that bridges to client and server data sources. With Salvo, users who want to obtain expense account forms, for example, can do so from the university system's Web site using their browser of choice. Expense account administrators who have been working with the mainframe software for years can stick with what they already know.

"People who use the screens for financial apps know how to do it," Kensicki says. "They don't need the Web."

The University of Wisconsin-Milwaukee takes a similar approach. "I don't force my administrative colleagues to implement something," says Garnham. "They don't need IT people coming in, imposing interruptions and training all of their staff on the Web. Perhaps a professional would like to, but clerks would not. There is no reason for me to take technology and ram it down their throats." WM

SCHOOL TIES: Carla Garnham is helping UWM give its 21,000 students the ability to register for classes online.

PHOTO BY JEFF LENDRUM

Gene Koprowski is a freelance writer based in Chicago. He can be reached via e-mail at geneasap@ix.netcom.com.

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Editorial, Advertising and Business Offices: 492 Old Connecticut Path, PO Box 9208, Framingham, Massachusetts 01701-9208, (508) 872-0080. **Postal Information:** *WebMaster* (ISSN 1091-0743) is published monthly by CIO Communications Inc., 492 Old Connecticut Path, PO Box 9208, Framingham, MA 01701-9208. Periodicals postage paid at Framingham, MA, and at additional mailing offices.

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EDI FOR THE REST OF US

Electronic data interchange has been around for decades, mainly as a tool used by big manufacturers for ordering and invoicing. And it's a good one: Online ordering and invoicing are neat ways to save some of those back-office dollars.

Now, products like Sterling Commerce Inc.'s Gentran Web Suite are making EDI a viable solution for small customers and suppliers as well. With Web Suite, all you need to be part of the gang is an Internet connection.

Web Suite is an enhancement of Sterling's Gentran:Server, a message management system used for electronic commerce and EDI in private networks. By establishing a gateway between a value-added network and the Web, thousands of smaller enterprises—even end customers—can participate in electronic trade.

The suite makes use of Gentran:Smartforms, a product that allows trading partners to receive, fill out and send electronic forms as easily as they can with a standard office application. It also incorporates Web Link, an add-on module that fully Web-enables the Gentran:Server. Web Link provides registration and download processes, handles security privileges and features tools for creating new electronic forms or updating software.

For more information, check out *www.stercomm.com* or call 800 678-5307.

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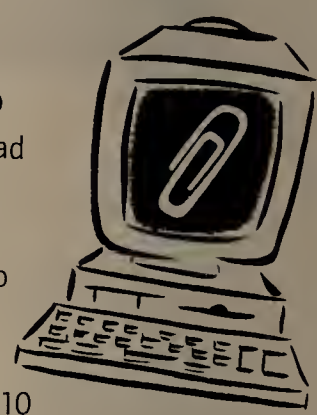

The straightest road to a destination isn't always the best—or the cheapest. So says a study showing that large corporations can spend as much as $10 million a year more than necessary on such office supplies as binders, staples and PCs. That's because employees often skip their companies' established cost-control mechanisms and just grab the first retailer they find.

So what's a frugal procurement officer to do? Change the perception of the system, advises Elekom Corp., a company specializing in electronic commerce applications. Make it as easy to do business with a company's preferred suppliers as it is to run down to the local Office Depot.

Elekom's solution allows users to make all purchases online from selected suppliers without sacrificing managerial approval or control over spending limits. Users simply browse the catalogs, make a selection and send their orders either directly to the supplier or to management for the nod.

The procurement system uses a combination of local databases and suppliers' Web sites. Authorized transactions can be forwarded to the supplier via EDI, e-mail or fax. Order confirmations and received orders can be logged into the system for comprehensive reporting. An ODBC-compliant relational database allows other applications—including accounts payable and asset management—to interact with the system at any point.

To find out more, browse *www.elekom.com* or call 888 353-5661.

ILLUSTRATIONS BY JOHN CLARKE

DOUBLE TALK

Do you spend hours on the Web, happily disconnected from the "real world"? Well, get ready, because reality is preparing to bust through those defenses.

Thanks to the Phone Doubler from Ericsson, Internet service providers will soon be able to integrate wireless-quality voice phone service with Internet accounts, allowing you to phone and surf at the same time. Call it the end of busy signals.

Phone Doubler creates a voice gateway that allows voice calls to be sent via Internet Protocol (IP) networks. The product simply routes incoming calls to your desktop, where you can pick up the receiver—that is, your computer's microphone and speakers—even while you're in the midst of browsing your favorite site. You also can place calls without losing Web time.

Phone Doubler is expected to hit the market this fall, and Ericsson is naturally targeting ISPs looking for a competitive edge. The telecommunications company sees Phone Doubler as a way to expand its product portfolio into small PC applications that could further the integration of computers and telephones.

For information, check out *www.ericsson.com* or call 212 685-4030.

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ROAM IF YOU WANT TO

You know that commercial in which a group of scientists in the Amazon rain forest needs quick information on some poisonous spider? They get a brilliant idea: "Let's connect to the Internet and run a query!"

They log on and next thing you know, a beautiful multimedia presentation is on their screens. Did they bring a satellite link? Is there cellular service in the Amazon?

What's keeping the Web from being the universally accessible resource everyone talks about are locally based ISPs. The Web is omnipresent, but chances are, your ISP is not.

HomeGate Corp. is trying to improve matters. Starting with 1,000 access points in 160 countries, the company will provide local dial-up around the globe, no matter where your ISP resides. Customers pay a monthly fee, plus 10 to 50 cents per minute, depending on their membership plan. There's one plan for domestic use and one for international travelers: HomeGate recommends the latter for anyone spending more than 33 minutes online outside the United States and Canada.

The service is simple to use: Just plug in your modem, click on the icon and select your location from a pull-down menu. HomeGate dials the nearest access point, and from then on you can browse the Web with your existing software and passwords. The same goes for sending and receiving e-mail. All fees—except for local dial-up—are charged to your home account. The client software is free at *www.homegate.net* or by calling HomeGate's Help Desk at 503 968-1303. For other information, call 310 533-3950.

SHARE WHERE?

Oh, for the days when information was sufficiently manageable that it could be contained within the drawers of a file cabinet. Information Dimensions Inc. is trying to restore some of that manageability with its new Basis document management system. Within the framework of an intranet or an extranet, Basis creates a common workplace where files can be created, processed or simply looked at by people with access to the data. Because geography matters not at all, such workplaces suit sprawling international projects in which participants in different time zones must share access to such documents as industrial drawings, schedules and presentations.

In one such project, Astra AB's Australian subsidiary is using Basis for an extranet that ties together architects, consultants, suppliers and executives assisting in the construction of a multimillion-dollar manufacturing center to serve the Pacific Rim. For more information, surf to *www.idi.oclc.org* or call 614 761-8083.

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THE VISITOR YOU KNOW

The problem with doing one-to-one marketing on the Web is that it can be difficult to determine who that second "one" is. Engage Technologies Inc. offers to help put a face to the nameless with a new suite of tools for user tracking, identification, registration, and demographic and psychographic profiling.

Engage tools make anonymous user data meaningful through context-based information overlays. The suite consists of three products. Engage.Journal uses customizable browser certificates to identify, track and log visitor activity within and across networked sites. Engage.Portrait allows companies to build user registration systems quickly without writing custom code. And Engage.Discover includes analysis and reporting tools for measuring content effectiveness and an iterative query tool for more detailed data analysis.

In addition, Engage.Knowledge—a large repository of anonymous Internet data—and Engage.Link-API—an application interface—are scheduled for release this month.

For information, head over to *www.engagetech.com* or call 508 684-3600.

ILLUSTRATIONS BY JOHN CLARKE

www.web-master.com

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NET BUSINESS: COLLABORATION, CO-OPETITION & PROFIT

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Although they have acquired the **experience** to guide business practices, **managers** may sometimes lack the ability to adapt to the **dynamic** technologies that their younger **Web-savvy** counterparts possess. How will executives embrace these **new technologies** and the early majority articulate the **benefits** of this new business medium?

Net Business: Collaboration, Co-opetition & Profit, to be held December 7-10 at the Century Plaza Hotel & Tower in Los Angeles, will address these issues. Moderated by **Tom Davenport** and featuring CIO's vice president of technology, **Tim Horgan**, we will explore both the required multi-disciplinary partnerships and affiliations necessary for improving 'Net **business** results and **business mastery**.

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